

EAST GIPPSLAND AREA

REVIEW

FINAL RECOMMENDATIONS



LCC LAND CONSERVATION COUNCIL

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REVIEW

FINAL

RECOMMENDATIONS

DECEMBER 1986



**LAND CONSERVATION
COUNCIL**

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Genoa River Valley

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Introduction

The Land Conservation Council was established by the *Land Conservation Act 1970*. As one of its three functions, it makes recommendations to the Minister for Planning and Environment with respect to the use of public land, in order to provide for the balanced use of land in Victoria. Notices showing the boundary of the East Gippsland study area and advising that an investigation was to be carried out were published in the *Victoria Government Gazette* of 18 July 1984 and in local and other Victorian newspapers in July 1984. A descriptive resources report was published on 28 August 1985.

Submissions

Following the publication of the report, the Council received 1930 submissions on the future use of public land. Individuals, associations, companies, and local and State government bodies, representing a wide cross-section of the community, made helpful submissions covering possible forms of land use for the district. In addition, discussions have taken place with many individuals and groups, both in East Gippsland and in Melbourne prior to the formulation of recommendations.

After considering these submissions, and having visited the study area, the Council formulated its proposed recommendations, which were published on 14 May 1986. The Council subsequently received 4807 submissions commenting on these proposals and had further input from various groups and individuals. After due consideration, the Council now presents its final recommendations.

Availability of submissions

All submissions received by the Council are available for inspection at the Council's offices, 464 St. Kilda Road, Melbourne.

Report contents

This report contains the Council's final recommendations concerning the use of public land in the East Gippsland study area, the boundaries of which correspond to those of the Shire of Orbost. The recommendations in the text are grouped under major headings, such as Parks, State Forest, and so on. Accompanying

the text is a map at the scale of 1:250 000 which covers the whole study area and gives a broad view of the recommended land uses. More detailed maps show areas recommended for agriculture (by alienation). Additional information on boundaries is held by the Land Conservation Council.

Land uses

The Council recommends the continued use or establishment of: parks in areas of particular importance for recreation and nature conservation; reference areas and education areas (covering part of the range of land types found in the study area); flora reserves and flora and fauna reserves for areas of value for conservation of representative plant communities and habitat; and wildlife reserves for several sites containing valuable faunal habitats. Other areas are recommended as historic reserves and substantial areas are recommended as State forest.

Where demands from competing uses vie for a given area of land, it is not possible to satisfy them all. Wherever possible, these recommendations attempt to achieve balance in providing for the present needs of most forms of use while retaining flexibility and the opportunity to adjust to future changes in such demands. They do so by placing as much of the public land as possible under forms of use that do not have a major impact on the natural ecosystem.

Flexibility in planning is essential. Our knowledge of many resources (for example, minerals) and of the distribution and ecology of plants is very imperfect. There must be many places in Victoria where special values remain unrecognized and for which no special provision can be made in present planning. Furthermore, future demands for resources on public land may require alteration or modification of these recommendations, which are based on the best information presently available.

Table 1 summarises the recommendations in terms of the major forms of use.

It is important to realize that each primary use has a number of compatible secondary uses. In

addition to nominating the best uses for the land, the recommendations indicate what is considered to be the most appropriate form of

tenure for the land and the most appropriate management authority.

Table 1: Public land use

Land use categories	Area (ha)	Percentage of all land covered by these recommendations	Percentage of all public land covered by these recommendations
National parks	239 156	25	29
State park	3 300	<1	<1
Coastal park	11 100	1	1
Regional park	800	<1	<1
Reference areas	11 045	1	1
Wildlife reserves	11 180	1	1
Flora and fauna reserves	6 005	<1	1
State forest	542 800	57	65
Bushland reserves	220	<1	<1
Coastal reserve	815	<1	<1
Marine reserves	60	<1	<1
Education areas	1 960	<1	<1
Recreation areas	340	<1	<1
Scenic reserves	1 565	<1	<1
Historic reserves	100	<1	<1
Agriculture	1 315	<1	1
Major utilities	810	<1	<1
Mineral and stone reserves	50	<1	<1

Other land uses collectively make up the balance.

Figures are rounded.

New Information

The Council is aware that many changes in demand for the use of public land cannot be foreseen, and that the value of environmental resources will change as exploration, research, and technology progress. For these reasons, the Council believes that periodic reviews of public land use in the State are desirable, and it must be expected that resources will be re-allocated or adapted to meet changed demands.

In its previous recommendations the Council identified two areas, the Gelantipy Plateau/Bowen Range and the headwaters of the Goolengook River, designating them as areas with both high conservation and timber values that were to be withheld from logging or new roading until public land use in East Gippsland was reviewed.

The Council did not commit these areas to any primary use because of a lack of detailed information, strong competing arguments regarding their use, and the availability (in the short term) of other areas with similar timber resources.

Since the publication of the Council's final recommendations for the area in 1977,

considerable new information about East Gippsland has been collected, which has generated a number of issues about the way that public land in East Gippsland should be used.

Flora and fauna

Until several years ago, few surveys of the natural resources in East Gippsland had been undertaken, and the available information covered only part of the study area. Then, however, the Environmental Studies Division of the former Ministry for Conservation initiated a series of research projects to identify sites of zoological, botanical and geological or geomorphological significance in the region, thus enabling the Council to place the attributes and natural values of East Gippsland in a State-wide perspective.

These studies provided considerable information about the area as a whole and identified particular species and sites of significance. (For example, the initial discovery of the long-footed potoroo—an East Gippsland endemic—did not occur until the mid 1970s, and it was not described as a new species until 1980.) They also drew together previous knowledge about the area to establish a much

improved data base, supplemented by more detailed flora and fauna surveys that the Department of Conservation, Forests and Lands conducted and by the Fisheries and Wildlife Service's work on the fauna. However, the surveys conducted so far have highlighted several gaps in the current knowledge and further work is required.

Some 21 vegetation communities have been identified in the study area by the National Herbarium. The majority of these occupy relatively small areas but are nevertheless highly significant because they are floristically diverse, contain rare species, or are in themselves restricted in occurrence on a State-wide basis. Examples in the third category include warm temperate and cool temperate rainforest, and rocky outcrop open scrubland.

By contrast, three communities—wet sclerophyll forest, lowland sclerophyll forest and dry sclerophyll forest—occupy more than 80% of the forested area in East Gippsland. Each of these communities, along with others in the study area, have been further subdivided into sub-communities that reflect changes in floristic composition, which is determined by differing environmental conditions. Both wet and dry sclerophyll forest comprise four sub-communities while lowland sclerophyll forest has six. Council believes that the reserve system should incorporate better representation of some communities and sub-communities and, in the case of particularly significant ones, such as warm temperate and cool temperate rainforest and their adjacent eucalypt buffer, that all occurrences should be fully protected.

Wet sclerophyll forest in East Gippsland is dominated by various eucalypts, depending on the location. In the western parts of the study area mountain ash, manna gum, messmate, and blue gum are dominant; on the Errinundra Plateau shining gum dominates (and has its most extensive occurrence in the State) while further east brown barrel (known locally as cut-tail) takes over as the dominant species. The great age and complexity of these forests (particularly those in the Rodger River and on the Errinundra Plateau) adds to their significance as very few stands of wet sclerophyll forest of such antiquity occur elsewhere in the State. The proposed park additions include representations of these various communities.

Examples of most of the coastal and near-coastal sub-communities of lowland sclerophyll forest are included in the Croajingolong National Park, but the foothill occurrences of the sub-community, which differ floristically from those near the coast, are not well represented.

It is important to note that the wet sclerophyll forest community and the lowland sclerophyll forest community are the two most wood-productive forest types and have been, and will continue to be, extensively utilised for timber harvesting.

The protection of native fauna depends on the availability and protection of suitable habitat. The East Gippsland area includes a range of habitats for native fauna and supports a number of significant faunal assemblages and rare or notable species. A number of habitats such as those of the long-footed potoroo are not within the existing reserve system, while other fauna such as the great barred frog, giant burrowing frog, smoky mouse, ground parrot, and tiger quoll, and a number of rare or significant species of bats require additional protection. Suitable habitat for these animals is known to occur in the various proposed additions to the park system.

Studies are continuing, particularly with respect to stands of rainforest, wet sclerophyll forest, 'mixed' forest, and multi-aged eucalypt forest, but many questions about the ecology of these forest types remain to be answered. Only limited work has been conducted on terrestrial invertebrates in the area, but it appears that the faunal assemblage is rich and varied and includes a number of species endemic to East Gippsland.

While the information regarding terrestrial flora and fauna is incomplete, far less is known about aquatic ecosystems and the biological communities they support. However, preliminary studies indicate that they are also varied and, by comparison with the remainder of the State, are little altered by human activities. In particular, they contain a complex and diverse invertebrate fauna.

Streams and catchments

A report recently produced by the Standing Consultative Committee on river improvement, entitled 'The State of the Rivers', concluded

that, 'The hydraulic and environmental characteristics of most Victorian rivers have changed dramatically since settlement. Moreover, the present condition of many of the rivers and their frontages is unsatisfactory and is becoming steadily worse with each flood.'

Many catchments throughout the State have been substantially modified from their original condition, primarily to meet the needs of the growing population.

By contrast, however, most catchments in East Gippsland are still predominantly forested and, although many have been subjected to various forms of human disturbance, some remain in an essentially natural condition. They therefore constitute an invaluable resource as reference catchments against which to judge the state of other streams in south-eastern Australia, and are an important part of the State's natural heritage.

Of the 36 species of native 'fresh-water' fish listed by McDowall (1980), as occurring in streams draining southern New South Wales and Victoria, 25 have been recorded in East Gippsland.

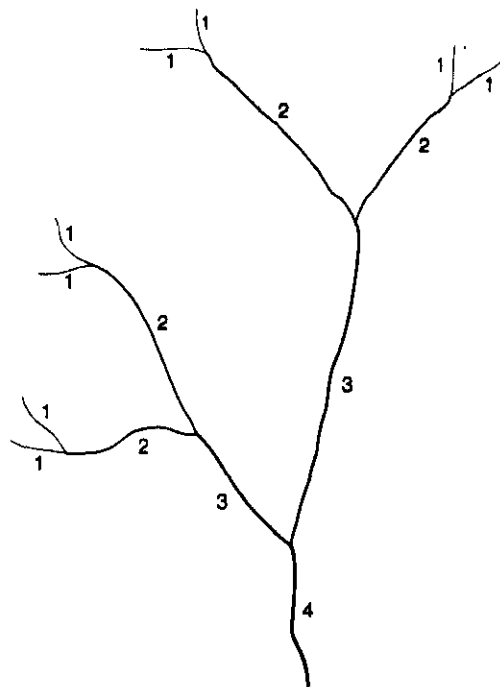
Furthermore, only three exotic species have been recorded and their distributions are limited. The introduced brown trout and rainbow trout are widespread in south-eastern Australia, thus increasing the significance of those East Gippsland streams in which they do not occur.

Information about the fresh-water invertebrate fauna is very limited, but the minimal work that has been done suggests that many undescribed species will be identified. Its range of climate and habitat types and its geographical position also suggest that the East Gippsland region is an important transition area between different climatic zones, and harbours several different groups of species at the limit of their ranges.

A preliminary assessment of streams in East Gippsland identified a number that remain in an essentially natural condition relative to others in the State. No catchment in the State has escaped some form of human disturbance, but some in East Gippsland have been modified to only a limited extent. The headwater tributaries (or first-order streams based on Strahler, see the diagram below) of numerous rivers across the State may be essentially

undisturbed, but as these tributaries converge to form larger streams and rivers (second-order or greater), very few could be so described. Even in East Gippsland, most streams larger than third-order (identified on 1:100 000 scale maps) have been modified to some degree. Therefore, those third-order or larger streams and their catchments in the study area that are essentially undisturbed are particularly significant in terms of their value for scientific study and conservation, and provide possibly the last opportunity in south-eastern Australia to protect catchments of reasonable size.

Stream order diagram
Based on Strahler, 1964



The approach used in East Gippsland was to establish broad stream types based on climate, physiography, and geology. Streams of high conservation status were identified using a number of criteria, including the presence or absence of impoundments and river improvement works, mining (past and present), logging, road crossings, grazing (past and present), and presence or absence of exotic species. Application of the criteria in East Gippsland defined 33 third-order catchments and 10 fourth-order as being in an essentially natural condition. Of these, only 12 are included in major conservation reserves.

in East Gippsland. The department uses this method as it is the most efficient means by which harvesting and adequate regeneration can be achieved. But some critics also consider it to be wasteful and environmentally undesirable; they put forward the argument that clear-felling creates the residues that the timber industry wants to utilise, but that other harvesting techniques such as selective felling, if adopted, would greatly diminish the volume of waste.

These, and other issues were raised in many of the 6700 submissions received. Other issues included the need to make public land available for future development, particularly along the coast, the promotion of tourism, and the need for safe boat access across the bar at Mallacoota Inlet. The major issues of additional parks and a continuing viable timber industry are considered in detail in following sections of these recommendations.

Timber industry inquiry

In 1984, the State government established a Board of Inquiry into a broad range of issues affecting the timber industry. This inquiry, conducted by Professor Ian Ferguson, was completed in June 1985 and has provided an important input to the Council's investigation of East Gippsland. Its terms of reference and report summary, and the government response, were included in the Council's descriptive report for the area. The inquiry made recommendations on rainforest and discussed several options for utilising the East Gippsland timber resource, as well as other recommendations about the future of the timber industry and management of the State's timber resource.

Subsequent to the publication of the inquiry report, the government announced the preparation of a timber industry strategy for the State. A draft strategy, released in November 1985, discussed a number of harvesting options for the timber resource in East Gippsland. The final strategy was released in August 1986, and provides a framework for the management of Victoria's timber resources. The details of the strategy as they relate to East Gippsland are discussed in Chapter E (State forest and timber production).

Economic study

The Land Conservation Council is required to make recommendations on the balanced use of public land. To do so necessitates a consideration of the economic and social, as well as the environmental, characteristics of East Gippsland. In order to fulfil this responsibility, the Land Conservation Council commissioned an economic study of the area.

The study identified the distribution of employment in the various sectors of the East Gippsland economy and the significance of each sector on a regional basis and for individual towns and settlements in the area. It has provided a description of the present socio-economic framework of East Gippsland against which the implications of future land use decisions can be assessed.

It indicated that about half of the 2520 jobs available were considered to be associated with the export sector of the economy (that is, with products sold outside the region). The two most important sectors were the timber industry and agriculture, although growth in these sectors was considered to be small. Tourism accounted for the third-highest number of jobs and, while still well below the timber and agriculture sectors, appeared to be growing at a significant rate.

Some 42% of the work force in East Gippsland is either directly or indirectly dependent on the timber industry, and several towns and settlements rely on the employment and income it provides. For every 100 jobs in the timber industry, another 62 jobs are created in related industries, giving a multiplier effect of around 1.6. The multiplier would be higher, except that more than 90% of the sawn-timber products are sold outside the study area, thereby reducing the benefits to the local economy.

By contrast, towns such as Mallacoota and Marlo depend upon tourism and commercial fishing and, as described above, tourism has a relatively high potential for increased employment opportunities compared with other sectors, unless major changes occur in those sectors.

Following preparation of the proposed recommendations, the Council engaged The National Institute of Economic and Industry Research (NIEIR) to prepare an assessment of the economic and employment effects of the

proposals. The main findings of that study are addressed in Chapter E (State forest and timber production) and its summation is attached as an appendix to these recommendations.

These two studies have been of considerable assistance to the Council in preparation of its final recommendations.

Other information

The Council commissioned several other studies relating to the East Gippsland area and these included the identification of sites of historical significance, an evaluation of vegetation communities and sites of botanical significance, and a study of the history of the Aboriginal people in the area. All of these studies are available for inspection at the office of the Land Conservation Council.

Final recommendations

In formulating its recommendations the Council has considered all the available information from a wide range of sources and has taken into account the various issues raised above. All the information on natural resources in the area was evaluated bearing in mind their significance on a State-wide basis. Aspects such as representation of land systems and major land types, vegetation communities, fauna, wilderness areas and essentially undisturbed water catchments were considered.

In the light of this evaluation, the Council now proposes to extend the existing reserve system in order to incorporate the full range of values represented in East Gippsland.

Major extensions to the Snowy River National Park and Coopracambra State Park and smaller additions to the Croajingolong National Park, Tingaringy National Park, and Lake Tyers State Park are proposed. A new national park centred on the Errinundra Plateau and a coastal park between Point Ricardo and Sydenham Inlet are also recommended. All areas of rainforest and an adjacent buffer are recommended for permanent protection, and several of the major stream corridors are to be incorporated in natural features zones.

The Council also believes, however, that substantial area of public land should continue to be available for the harvesting of wood products. Areas available for timber production

should be able to provide a range of forest products, without substantially degrading other forest values, by the careful application of appropriate silvicultural techniques. Some forest areas may be suited to intensive silvicultural treatment and the application of new technology. In other areas, it may be more appropriate to carry out less intensive treatment to protect important non-timber values.

It has been suggested that the multi-purpose management of forests can provide for the protection of all the significant values that are identified while still allowing the timber resource to be harvested from adjoining areas of forest; that is, there is no need to create national parks and other conservation reserves.

The concept of national parks is internationally recognized and embraces the notion that representative examples of the major land and vegetation types, together with the outstanding features occurring on public land, should not be subjected to commercial exploitation nor the environmental disturbance associated with such enterprises. These areas should, because of their significance, be afforded the maximum possible protection in legislation.

In national parks and State parks, the aim of management revolves about the need to provide recreational and educational opportunities consistent with the maintenance of environmental and conservation values. Developments associated with the use of these parks is confined to relatively small areas to minimize disturbance. However, in areas set aside for a different range of uses such as are permitted in State forest where timber production is a major use, the management aims differ and considerably larger and sometimes contiguous areas are subject to modification, with emphasis on particular forest types and locations. Although protection of natural values is an essential part of the management of all forests, decisions must often favour one particular form of use over another and the maintenance of biological diversity and protection of natural values can be reduced when the supply of forest products is a major use.

The Council believes that in parts of the public land estate, pressures to modify the natural environment should be minimized as far as is possible. Consequently it has adopted the policy of setting aside areas of public land for parks,

to be used in ways that are consistent with this aim.

Timber production and parks

The Council recognizes that the timber industry forms a significant component of the narrowly based East Gippsland economy and believes it will continue to do so in the foreseeable future. Future options for the industry here should aim at maintaining an adequate resource base to provide for the continuation of timber production until regrowth resources become available.

As the Timber Strategy indicates, this will only be achieved through a reduction in the annual rate of harvesting to a sustainable level until regrowth timber is available in 40 or so years, and will have important implications for employment in the timber industry.

Several alternatives have been raised in submissions and in discussions that could provide additional employment; the expansion of tourism and other sectors of the economy; the establishment of a value-added processing industry in East Gippsland; and the introduction of integrated harvesting to allow the utilisation of pulpwood and provide additional sawlogs to permit the establishment of a more stable, broadly-based socio-economic environment.

The Council has proposed, for the reasons summarized earlier, the addition of substantial areas of land to parks. As a result, significant stands of productive forest would be included in parks, particularly around the Rodger River-Bowen Range, Errinundra, and Mount Kaye/Coopracambra.

It is estimated that the park proposals will withdraw about 2 400 000 m³ of the available sawlog resource (9 765 000 m³) and it is recognized that this will further reduce the sustainable yield in the study area.

The Council also believes that the areas available for timber harvesting within State forest should be able to achieve their potential for wood production, where this can be done within defined environmental guidelines. Thus, within the area identified as State forest, the harvesting and sale of timber for pulpwood could proceed from those areas harvested for sawlogs, provided certain requirements can be met.

Various other factors, external to the Council's recommendations, could in the future increase or decrease the level of the remaining available resource. Further reductions could result from Department flora and fauna surveys in other forest blocks in East Gippsland or as a result of the identification of other significant values. On the other hand, additional resources would become available if utilisation standards for sawlogs changed.

Tourism

It is well established that East Gippsland has a narrow economic base and depends to a large extent upon the timber industry and agriculture (including commercial fisheries). The Council believes that the region needs to expand this economic base to ensure a more stable socio-economic environment and to utilize more fully the natural resources occurring in the area. The Council considers that there is scope for the expansion of tourism in the area, particularly associated with large and diverse national parks and development along the coast.

The government's tourism strategy for the South Coast region, which covers an area from Sale eastwards to the border, identifies the Gippsland Lakes as the primary focus for development. While the major emphasis will be on attracting tourists (including those from overseas) to the lakes, other tourist features within a day trip from there will be ideally placed to attract these visitors, particularly if their development is part of a co-ordinated approach to tourism in the region.

Many places in the East Gippsland area lie within a day's drive of the lakes and offer a range of attractions for day visitors.

The Government has also recently announced the development of a Tourism Strategy for the East Gippsland Area, which will complement the South Coast Region Strategy Plan currently being prepared.

The potential exists for further development of accommodation facilities in the area to enable more people to enjoy the diverse attractions that East Gippsland has to offer. In this regard, the Council supports the development of additional recreational facilities at Cape Conran and the possibility of future developments at other locations. The Council considers the concept of leasing public land for major

developments in certain places, both as an incentive for investment and as a mechanism for ensuring that any development is compatible with the maintenance of environmental values should be examined.

The Council also recognizes that parts of East Gippsland provide excellent opportunities for more isolated forms of recreation and that these areas need to be retained in an undisturbed condition. This type of recreation experience is growing in popularity and use of certain areas may need to be carefully controlled to ensure that increasing use does not impair either the recreational experience or the natural environment.

Further detail about the issues raised in the preceding discussion and indeed many other issues can be found in various chapters, which describe more fully the Council's final recommendations.

Public land and the Aboriginal people

The Aboriginal people occupied and used East Gippsland long before white settlement. Their descendants have strong emotional and cultural ties to public land and still use it for a variety of purposes associated with traditional activities such as hunting, fishing, gathering of herbs, and the manufacture of artefacts from timber and stone. Aboriginal groups believe certain areas have a particular significance. Such places include sacred sites and ceremonial grounds. Other sites that provide valuable evidence of occupation and Aboriginal culture are also regarded as highly important. The evidence to date suggests that occupation was centred on the inlets and river systems and along the coast. However, few investigations to identify sites have been conducted in hinterland areas. Further studies are therefore needed in order to prepare a comprehensive register of sites. The Council has proposed elsewhere in these recommendations that such studies be carried out in association with the flora and fauna surveys conducted by the Department of Conservation, Forests and Lands. In addition, it is important that a detailed oral history of Aboriginal culture and history of the area be prepared as soon as possible, before valuable information is lost forever.

Aboriginal groups are also concerned about access to public land and their ability to carry out traditional practices such as hunting, food gathering for non-commercial uses and the collection of wood and other natural resources that are used for traditional purposes.

The Aboriginal communities regard the establishment of viable economic enterprises that provide employment for members of their community as the key to their security and independence from government assistance in the future. They have therefore expressed interest in acquiring or leasing areas of public land to establish viable agricultural or other projects to provide income and employment.

While government departments employ some Aboriginal people, these proposals do offer prospects for additional employment in the government sector, particularly in connection with the establishment of interpretive facilities proposed for Orbost and Mallacoota.

The Council welcomes the commitment of the Department of Conservation, Forests and Lands to public participation in the preparation of management plans. It suggests that special attention be given to the involvement of the Aboriginal community, particularly with respect to the protection and management of sites of particular significance to the different communities in East Gippsland.

The Australian Heritage Commission

This Commonwealth statutory authority was established under the *Australian Heritage Commission Act 1975* as the government's policy, advisory, and administrative body responsible for the National Estate. The National Estate is defined in the legislation as "those places, being components of the natural environment of Australia, or the cultural environment of Australia, that have aesthetic, historic, scientific or social significance or other special value for future generations, as well as for the present community".

Australia's National Estate is thus a wide-ranging concept that covers a variety of features.

The natural environment includes:

- * national parks, nature reserves, and other places for the protection of flora and fauna
- * the coastline and islands
- * inland water expanses, rivers, lakes, and other wetlands
- * special land forms, geological features, caves, forests, woodlands, and grasslands
- * areas of scientific interest

The cultural environment includes:

- * Aboriginal rock art sites, ceremonial grounds, and sacred sites
- * Aboriginal quarries and shell mounds, camp sites, and fishtraps
- * important historical and archaeological sites (both Aboriginal and European) such as old missions and cemeteries
- * historic buildings and structures, either individual or in groups, including sawmills, tramlines, loading wharves, derricks, punts, equipment, and their relics
- * historic towns and precincts

Establishment of the Heritage Commission

Public response to the original Committee of Inquiry into the National Estate (which reported to Federal Parliament in 1974) demonstrated that Australians do have a strong concern for the environment and that the cause of much previous neglect and destruction was a lack of public education regarding the need and means to preserve the National Estate. The Committee of Inquiry therefore recommended the establishment of a national body to be concerned with national policy and co-ordination. As a signatory to several international conventions and recommendations (the most important of these being the World Heritage Convention), Australia also has an international responsibility to protect its National Estate. Accordingly the *Australian Heritage Commission Act* was passed in 1975 and the first Commission was appointed in 1976.

Functions

One of the Commission's major responsibilities

is to prepare and maintain a Register of National Estate places. The Register is thus an inventory of the significant parts of the cultural and natural environment of Australia.

Compilation of the comprehensive Register will take many years and will be a continuing process, but all registrations will have the same status irrespective of the time of their entry. There are no gradings between different categories of places in the Register and all places registered are professionally assessed in terms of the National Estate values.

The effect of registration

Registration of a place formally recognizes its National Estate values and in turn imposes some constraints on the actions of Commonwealth Ministers and authorities. The *Act* provides that Commonwealth Ministers and their agencies must not take any action that would adversely affect any place in the Register—unless there is no feasible or prudent alternative, unless all action is taken to minimize damage where no such alternative exists, and unless the Commission is informed and given time to comment. The Commission, under its *Act*, has no power with respect to the action that might be taken by State governments, local governments, private land-owners, or institutions, nor does it imply any particular attitude by the Commission or the Commonwealth to the ownership, management, or use of a place listed in the Register. Registration of a natural area does not, for example, mean that the Commission or the Commonwealth holds a view that the area should be a national park or public reserve. Rather, it means that the place has been recognized as an important component of the National Estate. The significance of the area may have been retained or enhanced because of or in spite of past management. Registration, therefore, should not be interpreted as endorsing or condemning any particular management practice or regime.

Traditional uses such as forest harvesting and silviculture, farming, fishing, recreation, and water regulation would be permitted to continue, as these have influenced the landscape as it presently exists and have played a role in the development of Australia.

Nomination of places for the Register

Any member of the public is entitled to nominate a place for the Register, and a special form has been prepared to assist in this regard. As the Register is an ongoing project, places may be nominated at any time.

Before a place is entered in the Register, the Commission is required to enter it on an interim list and to inform the community of this through a public notice. Any individual or organization may lodge in writing to the Commission an objection to the proposed registration of a place. The minimum time for public comment is 3 months from the date of public notice.

Within the East Gippsland area, some 25 areas are listed in the National Estate Register. These include the Croajingolong, Snowy, and Tingaringy National Parks, several flora and fauna reserves, the Betka River catchment, and the lighthouses at Point Hicks and Gabo Island. Three additional areas—Rodger-Bowen, Errinundra, and Coopracambra-Kaye—have recently been placed on an interim list. The Council supports the registration of these very significant areas.

The Department of Conservation, Forests and Lands

The Department of Conservation, Forests and Lands was formed in 1984 by amalgamating the Forests Commission, National Parks Service, Fisheries and Wildlife Division, Department of Crown Lands and Survey, Soil Conservation Authority, and part of the central administration of the Ministry for Conservation.

The primary role of the Department is to manage Victoria's public land so as to ensure that its resources are protected and used properly, and to care for the State's water catchments and assist landholders to conserve soil, fauna and flora, and general amenity.

Head Office, located in Melbourne, consists of six Divisions, four of which are the functional arms—now known as the National Parks and Wildlife Division, Fisheries Division, Public Land Management and Forests Division and the Land Protection Division. This last Division comprises staff formerly in the Soil Conservation Authority and Vermin and Noxious Weeds Destruction Board, and the

tree-growing extension group within the Forests Commission.

The functional arms are responsible for policy development and the preparation of State-wide plans and programs, technical standards, guidelines, and prescriptions, and for monitoring implementation in the regions.

Public land management is implemented by the Regional Management Division in accordance with the approved annual programs and the guidelines and technical standards provided by the Head Office functional groups.

The State has been divided into 18 regions and each regional group is responsible for the management of public land in that region, irrespective of whether an area is national or State park, State forest, or some other reserve set aside for a particular form of community use. Management plans will be prepared by staff from the regions and functional arms working together.

Particular attention has been given to fire-prevention and suppression. Fire-protection services for public land are provided and co-ordinated by the Regional Management Division. The amalgamation provides significant additional benefits: direct involvement of much larger forces of staff and employees in prevention and suppression; and better co-ordinated and more readily available support forces of manpower and equipment. All these elements collectively enable more effective fire-prevention and fire-suppression programs to be achieved on the public lands of the State.

Under legislation soon to be introduced in the State parliament, the Director-General of the Department of Conservation, Forests and Lands will assume the statutory responsibilities of such bodies as the Forests Commission (under the *Forests Act* 1958), the Soil Conservation Authority (under the *Soil Conservation and Land Utilization Act* 1958), and the Vermin and Noxious Weeds Destruction Board (under the *Vermin and Noxious Weeds Act* 1958). Although the various functional arms of the Department exercise particular responsibilities, their roles in the administration, planning, and management of public land are closely interwoven and consequently reference in the text will be to the Department rather than to specific sections.

General recommendations

The following recommendations qualify those in the body of the text.

The Council wishes to stress the need for adequate management and protection of public land, as it has made its recommendations on the assumption that sufficient manpower and finance will be provided for the appropriate management. Unless these resources are provided, the Council's recommendations cannot be effectively implemented. Council emphasizes that vermin and noxious weeds pose problems in the management of public land in the East Gippsland area. Finance and staff are required to research and implement methods of control of pest species. Council therefore recommends:

- I That the authorities responsible for managing and protecting the public land be given the resources necessary for the task.

Following Council's proposal that additional arrangements be made for protecting public land from fire, an amendment to the *Forests Act 1958* has created the designation "protected public land", which may include public land that is not State forest or national park. The amended Act provides for the protection from fire of all three categories. The role of providing fire-prevention and fire-protection services has now been assumed by the Department of Conservation, Forests and Lands.

Under the provisions of the *Forests Act 1958* and notwithstanding anything to the contrary in any other Act, fires in every State forest and national park, and on all protected public land, must be suppressed. This includes, for example, all areas included in the schedules to the *National Parks Act 1975*.

In the event of fire in any State forest, national park, or area of protected public land, powers of entry are provided under both the *Forests Act 1958* and the *Country Fire Authority Act 1958*. Decisions as to the most appropriate course of action required to suppress the fire and as to the most appropriate equipment to be used, are the responsibility of the Department of Conservation, Forests and Lands.

The two organizations that carry out fire prevention and suppression in rural Victoria—namely, the Department of Conservation,

Forests and Lands and the Country Fire Authority—have closely co-ordinated arrangements for mutual co-operation.

The Council acknowledges that the control and suppression of fires in East Gippsland relies heavily on the manpower and machinery resources of both the timber industry and volunteer fire brigades in the region. Many of the volunteers are also timber industry workers. In particular the industry, with its manpower and equipment such as bulldozers, provides an important resource in the event of an outbreak of fire.

The Council realizes that a decline in activity in the timber industry for whatever reason will affect the fire-fighting capability in the region. This needs to be recognized by the government when decisions are made on the available funding for fire protection and suppression.

The Council recommends:

- II That, for fire-protection purposes, public land that is not State forest or national park be examined, and appropriate areas be declared protected public land under the *Forests Act 1958* or under any future Acts that replace it.

Council recognizes that parts of the East Gippsland area have potential with respect to future mineral exploration and mining operations.

The Council recommends:

- III That mineral exploration licences held over the area continue except in so far as they affect Reference Areas.

The Council expects that, as a result of further study and investigation, many more areas with special values will be identified. Present planning cannot specifically provide for the conservation or utilization of these values. The Council therefore recommends:

- IV That, when significant new discoveries are made on land within their administration, government agencies enlist the best advice available on the importance of such discoveries and how they should be managed. Advice from organizations other than government authorities and academic institutions should be sought whenever appropriate.

The Council also recognizes that in some cases existing legislation will have to be amended in order to effectively implement the recommendations in this report. It is aware that this may result in a delay, perhaps of several years, before some of its recommendations can be implemented. It is concerned that, where implementation of the recommendations would involve a change of land tenure, management efficiency could be reduced during the delay period. The Council believes that the government should direct that the intent of the recommendations should be followed until they are implemented.

The following recommendations concern the implementation of recommendations:

V That the present legal status and management responsibilities for public land continue until the resources required to implement the recommendations are available.

VI That, as the boundaries of many areas have not been precisely surveyed, they be subject to minor modifications, road excisions, easements, and other adjustments that may be necessary.

VII That in cases where occupation does not agree with title, the Department of Conservation, Forests and Lands may at its discretion make adjustments to boundaries of public land when implementing these recommendations.

VIII That the recommendations in this publication do not change the status of roads passing through or abutting public land that are at present declared roads under the *Transport Act 1983*.

IX That, where areas of public land are not specifically referred to in these recommendations, present legal uses and tenure continue.

A. Parks

Victoria contains substantial areas of public land that have been retained in a relatively natural state. The number of people using these areas for recreation is increasing and will probably continue to do so. Pressures for the use of public land in ways that would change its condition are also increasing. Council believes that it is essential to reserve, now, viable samples of the various land and vegetation types, together with the outstanding natural features, that occur on public land. These areas can best be reserved in a system of parks.

In contrast to the rest of Victoria, the East Gippsland region retains several large areas that are essentially natural and contain examples of the landscape and flora and fauna virtually undisturbed by activities of European man. Such lands are a valuable part of our heritage and must be dedicated for nature conservation and the benefit, education and enjoyment of present and future generations. This principle of land use is a major consideration in determining that areas should be reserved as parks.

A park is defined here as "an area of land in a natural or semi-natural condition reserved because of its scenery, floral and faunal content, historical interest, or other features, which is used by the public primarily for open-space recreation and education". This definition encompasses many different types of parks; they vary mainly in size and content and in the types and intensity of uses to which they are subjected. Definitions of different types of parks are needed to clarify the main purposes for which each one is created, and will help planners, managers, and users of parks.

It is necessary to establish the management aims that apply to areas or zones within parks. Among these, the conservation of native flora, fauna and other natural features would be an essential part of national and State park management. This should include the identification and strict protection of significant ecological systems as well as the development and use of techniques (including husbandry techniques and population manipulation) to enable species of particular interest to be studied and special values associated with flora and fauna to be maintained or enhanced.

The location and management of areas zoned for intensive recreation will require special care to prevent damage to the environment.

This publication presents recommendations concerning parks in terms of the uses to which the land should be put. Parks have also been placed into categories, according to the scheme of classification suggested below.

Park categories

National park

An extensive area of public land of nation-wide significance because of its outstanding natural features and diverse land types, set aside primarily to provide public enjoyment, education, and inspiration in natural environments.

The conservation of native flora, fauna and other natural features would be an essential part of national park management. Interpretative services would be provided. Development of facilities would be confined to a very small portion of the park. Activities would largely consist of sightseeing and the observation of natural features. Wilderness zones, which are relatively undisturbed tracts of land used for solitude and wide-ranging forms of recreation, could be designated within a national park.

State park

An area of public land, containing one or more land types, set aside primarily to provide public enjoyment, education and inspiration in natural environments.

State parks should include samples of major land types not already represented in national parks and, as in national parks, the conservation of native flora and fauna would be an essential feature of management. Interpretative services would be provided. Development of facilities would be limited to a very small portion of the park. Activities would largely consist of sightseeing and the observation of flora, fauna and other natural features. State parks

recommended by the Council are intended to complement the national parks so that together they form a State-wide system.

Regional park

An area of public land, readily accessible from urban centres or a major tourist route, set aside primarily to provide recreation for large numbers of people in natural or semi-natural surroundings.

These parks would be intensively developed for informal recreation and could include road systems. Although natural beauty would enhance their value, closeness to an urban centre is more important than natural attributes. Other uses—such as stone extraction or timber harvesting—may be permitted where they are compatible with the primary use.

Coastal park

An area of coastal land, usually linear in shape and comprising the coastal reserve and adjoining public land, which has natural features, flora and fauna, that give it particular landscape and conservation significance.

Coastal parks usually include small areas that are intensively used for recreation and also areas of conservation significance due to the occurrence of remnant vegetation, particular plant associations or important faunal species. It is necessary to zone coastal parks to provide for the continuation of recreational pursuits while ensuring that the natural attributes are protected.

Park management

Council recognizes that wildfires, however caused, must be prevented from threatening life, property and natural resources in the State. The measures necessary to control wildfires must be taken in parks as in other areas. In all parks the suppression of fires remains the responsibility of the Department of Conservation, Forests and Lands.

Fire-prevention measures such as maintenance of fire-access tracks and protective burning will also be required in those areas of parks that have strategic importance for fire-control.

The particular measures to be taken in individual parks will be incorporated in the protection plans prepared by the Department of Conservation, Forests and Lands.

The two organizations that share the duty of fire-prevention in rural Victoria—namely, the Department of Conservation, Forests and Lands and the Country Fire Authority—have closely co-ordinated arrangements for mutual co-operation.

The control of vermin and noxious weeds within parks will continue to be the responsibility of the Department of Conservation, Forests and Lands, and will be carried out in accordance with plans prepared by the Department.

With sensitive and responsive planning and management, the Council believes, the park should be able to cater for a broad spectrum of public recreation activities without prejudicing its other major functions—namely, long-term conservation and protection of the area's special natural features.

An essential aim in the reservation of an area as a park is to provide for the enjoyment of the public, and therefore public access will be maintained. Indeed, additional access may be provided to interesting areas by way of nature trails and walking tracks.

The Council believes that the park system should offer a wide range of recreational uses. There is a place not only for photography, bird-watching, nature study, etc., but also for activities such as scenic driving and touring using the tracks through rugged terrain and into isolated areas as well as the system of formed roads.

Because of its network of roads, the region has particular value for motorized recreation. The Council considers that the park system should continue to contain a series of linked roads, mainly of four-wheel-drive standard, available for use by licensed vehicles in order that extended touring throughout the area is possible. However, as well as this system of linked roads, other subsidiary tracks should be maintained for community use.

The Council points out, however, that the existing system of seasonal road closures, for reasons such as safety and erosion hazard, should continue, after consultation between the managing authorities and user groups.

Dispersed camping occurs throughout the area in association with many outdoor recreational activities. The Council considers that large areas should remain available for dispersed or bush camping within the park system. That is, in these areas, users should be allowed to camp where they choose rather than be restricted to camping sites delineated by the managing authority.

In a number of places it will be necessary to transport timber through some parks due to the fact that they lie between areas of commercial forest and the sawmills. Council believes that the use of any roads designed and built primarily for the purpose of transporting timber should not be restricted. Every effort, however, should be made to reduce the impact of logging roads on important park features, and, to this end, the National Parks and Wildlife Division should be fully consulted in the planning of new roadworks.

Parks in East Gippsland

In 1977, the Council recommended the establishment of three national parks, two State parks, and one regional park, totalling 141 600 ha. The government subsequently accepted these recommendations, but also decided to retain the existing Lind and Alfred National Parks, bringing the total area in parks to just over 145 000 ha.

Snowy River National Park and Tingaringy National Park encompass the eastern side of the Snowy River valley and contain some of the most spectacular scenery in the State. They also include a range of environments, with good representations of the dry rainshadow country typical of the Upper Snowy area. The Croajingolong National Park incorporates excellent examples of the coastal and adjacent lowland environments found in East Gippsland and is one of the most significant conservation reserves in the State, being one of only three established world biosphere reserves in Victoria. It is also a very important recreation asset.

Coopracambra State Park incorporates the spectacular Genoa River gorge with its steep sandstone escarpments and virtually undisturbed vegetation. Lake Tyers State Park includes attractive forests of Gippsland grey box around its shores and provides a range of water-based recreation, including boating, fishing, water-skiing, and swimming.

Mount Raymond Regional Park—approximately 12 km from Orbost—offers panoramic views over Orbost township, the Snowy River floodplain, and the coastal lowlands around Marlo.

Lind and Alfred Parks

Both Lind and Alfred were reserved as national parks many years before the Council developed a comprehensive reserve classification system based on scientific assessment and representation of land systems. Under this system, some of the small national parks established many years ago are more appropriately classified as other types of reserve depending upon their inherent characteristics.

While neither Lind nor Alfred strictly meet the requirements of the national park classification, the Council recognizes the concerns expressed by many people about the proposal to remove two areas of such long standing from schedule 2 of the *National Parks Act 1975*.

The Council has therefore decided to amend its proposed recommendations and will continue to identify these two areas as the Lind and Alfred National Parks.

However, it is important to note that, irrespective of whether an area is called a park, flora reserve, or scenic reserve, its nature conservation values or features will be permanently protected in a way that only an Act of Parliament can change.

Appendix 1 lists the land uses specified for parks in the Council's previous recommendations published in 1977.

New park proposals

In formulating its recommendations for additions to parks in East Gippsland, the Council evaluated all the information on the natural resources in the area, bearing in mind their significance on a State-wide basis. The representation of important features and values in the existing park system was also taken into account. Council also took account of the need to provide timber resources for a continuing industry in East Gippsland.

The Council is now proposing major extensions to the Snowy River National Park and Coopracambra State Park and smaller additions to the Croajingolong, Tingaringy, Lind and Alfred National Parks as well as the Lake Tyers

State Park. A new national park centred on the Errinundra Plateau and a coastal park between Point Ricardo and Sydenham Inlet are also recommended. In total, recommended additions to the park system comprise some 109 000 ha. Each park addition is discussed further below.

National parks

Tingaringy National Park

Recommendation

- A1 That the area of 17 600 ha, shown on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977 (see Appendix 1) except that grazing be phased out by 1988.

Addition to Tingaringy National Park

The proposed addition incorporates most of the public land between the existing Tingaringy Park and freehold land to the south.

The catchment of Big Murrumbidgee Creek contains at least 12 native plants that are not known to occur in any other reserve in East Gippsland although some are relatively common elsewhere in the State. Others, however, such as short wallaby-grass (*Danthonia geniculata*) and pappus grass (*Enneapogon nigricans*), are essentially western Victorian species but occur in this part of the Snowy River rainshadow. The uncommon rock daisy (*Brachycome petrophila*) also occurs in the area. The vegetation ranges from riparian forests of manna gum along the Deddick and Bonang Rivers to the dry box-stringybark woodlands throughout most of the catchment.

Rocky outcrop open scrubland communities occur around the summits of Mount Whittakers, Mount Taylor, and Mount Bulla Bulla and these contain a number of rare species including shrubby everlasting (*Haloragodendron baeuerlenii*) and tall acrotriche (*Acrotriche divaricata*).

The park addition includes most of the remaining rainshadow woodland on public land in the area which is known to be the stronghold of tiger quoll populations in eastern Victoria. This species is considered rare although it is recorded in isolated populations across the State.

Addition of the Big Murrumbidgee Creek offers alternative walking access into the park from the Deddick River road, while the attractive riparian environments along the Deddick River and Bonang River provide opportunities for picnicking and shorter walks—for example, to the falls on the Bonang River just west of Dellicknora.

This area forms part of the Tingaringy-Byadbo Wilderness identified in a State-wide inventory of potential wilderness areas conducted in 1979. It abuts the Byadbo wilderness zone in the Kosciusko National Park in New South Wales and should thus be managed in a way that is compatible with the maintenance of its wilderness values.

Recommendation

- A2 That the area of 9700 ha, shown on Map A, be added to the Tingaringy National Park and be used to:
- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
 - (ii) conserve and protect natural ecosystems
 - (iii) supply water and protect catchments and streams
- that
- (iv) the area be managed in such a way as to maintain its wilderness values
 - (v) logging not be permitted
 - (vi) hunting and use of firearms not be permitted
 - (vii) grazing be phased out by 1988
- and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Note:

Land-owners in the Deddick Valley experience particular problems with wild dogs, which, if not controlled, can have a major impact on their farming enterprises. The Council

considers that special attention needs to be given to the dog problem in this area, in both State forest and national parks.

Snowy River National Park

Recommendation

- A3 That the area of 25 600 ha, shown on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977 (see Appendix 1).

Rodger-Bowen addition to the Snowy River National Park

This addition forms a major extension to the Snowy River National Park and includes the entire catchments of the Rodger River (above its confluence with the Yalmy River), New Country Creek and Mountain Creek, as well as the headwaters of several smaller streams that flow northward into the Deddick River.

Topography

Topographically, the area ranges from the plateau country around Mount Gelantipy, through the deeply incised valleys of Mountain Creek and New Country Creek, to the more subdued relief in the Rodger River catchment. It contains some outstanding scenic and landscape values; in particular, the panoramic views from vantage points on the Bowen Range at the Pinnacle, Mount Tower, Mount Richardson and Mount Bowen. Breathtaking views can be obtained of the rugged and untracked Mountain Creek catchment and the Gelantipy Plateau, as well as of areas to the north including the Tingaringy Ridge and the high country as far as Mount Kosciusko. The tall mature forests that dominate the Rodger River area also have outstanding scenic value and comprise one of the few remaining pockets of ancient wet sclerophyll forest in the State.

Catchments

The Rodger River catchment and the Mountain Creek catchment (both within the proposed addition) have been identified as essentially undisturbed, while similar catchments throughout the area have already been

subjected to varying levels of disturbance. The stream types they represent do not occur in existing reserves.

Vegetation

Vegetation throughout the Rodger-Bowen area is complex and varied and has been identified by the National Herbarium as being of national significance. The very old ash forests of the Rodger River are particularly significant in that the stands contain trees of several age classes with mature stems scattered among younger trees. These ancient multi-aged forests are uncommon in Victoria, but are well represented in the Rodger River catchment and contrast with the extensive stands of relatively young even-aged ash elsewhere in the State. Some stands in the Rodger River catchment contain as many as five different age classes, each being representative of a period of regeneration, most probably as a result of fire. Some of the oldest individuals in the multi-aged stands reach heights of 80 m and are thought to be about 350 years old. These veterans have also survived at least four wildfires which initiated the regeneration of successively younger-aged trees. Such multi-aged forests, being uncommon in Victoria, have not yet been adequately studied by ecologists, who may be able to shed new light on the life cycle of wet sclerophyll communities.

Other significant vegetation includes the extensive and relatively undisturbed stands of alpine ash on the Gelantipy Plateau and manna gum forests in the Mountain Creek and New Country Creek catchments. In addition, the montane sclerophyll woodlands and snow gum woodlands on the summits and northern slopes of the Bowen Range contain a number of uncommon or interesting species, including the alpine star bush (*Asterolasia trymaloides*), tufted daisy (*Brachycome scapigera*), yellow hyacinth orchid (*Dipodium hamiltonianum*) and the bush-pea (*Pultenaea procumbens*). The montane woodlands also differ floristically and structurally from those in the Tingaringy National Park, while the snow gum woodlands contain stands of the spinning gum (*Eucalyptus perriniana*).

Excellent examples of rocky outcrop-open scrubland occur on the northern slopes of the Bowen Range and in the lower portion of the Mountain Creek catchment. This community

contains mallee-like forms of several eucalypts, including gully gum (*E. smithii*), manna gum (*E. viminalis*), and Suggan Buggan mallee (*E. saxatilis*), but in some cases eucalypts are absent and it is dominated by rock wax-flower (*Eriostemon trachyphyllus*) and red wattle (*Acacia silvestris*). The community also includes a number of other plants not previously recorded east of the Snowy River. The whole of the Gelantipy Plateau-Bowen Range area was placed in a special uncommitted land category in the Council's previous recommendations pending a review of land use.

Other significant vegetation includes the multi-aged stands of alpine ash and shining gum containing the rare monkey mint bush (*Prostanthera walteri*) in the vicinity of Monkey Top and wet sclerophyll forest dominated by blue gum in the Rodger River catchment.

The riparian vegetation along the Rodger River in the vicinity of the Deddick Trail is particularly rich in species and several are rare or uncommon. These include the rock daisy (*Brachycome petrophila*), bog bent-grass (*Deyeuxia gunniana*), and an undescribed cushion moss that could be the first Australasian record of the genus *Hygrohypnum*.

Also important is the grassland at Waratah Flat which contributes significantly to the structural and floristic diversity of the area. It contains several rare, interesting, or restricted species including red-stemmed cranes-bill (*Geranium neglectum*), bog bent-grass, swamp daisy-bush (*Olearia glandulosa*), mauve leek-orchid (*Prasophyllum suttonii*), and sun-orchid (*Thelymitra retecta*).

In terms of its vegetation, the addition has importance because of the juxtaposition of a wide variety of communities and because, together with the existing Snowy River National Park, it forms a reserve of national conservation significance.

Fauna

The proposed addition contains a rich and varied faunal assemblage dependent on the range of vegetation occurring there and its essentially mature and unmodified condition. Several rare or restricted species are also known to occur in various parts of the area.

The mature forests of the Rodger River area support: good populations of arboreal mammals, including four of the five species of

Victorian gliders; a variety of forest bats, including one undescribed species belonging to the genus *Nycticeius*; occurrences of the two rare owls, the powerful owl and sooty owl; and other species requiring hollows for nesting such as cockatoos, lorikeets, parrots, kingfishers, and treecreepers. These species all rely on substantial parcels of mature forest for nesting, feeding and roosting.

In addition, the rare long-footed potoroo is known to occur in the Rodger catchment. This East Gippsland endemic was not described until 1980 and is not currently known in any reserve in East Gippsland. Other significant species recorded in the area are the tiger quoll, giant burrowing frog, Jervis Bay treefrog, southern water skink (both warm temperature and cool temperature forms), White's skink and weasel skink.

Recreation

The recreational attributes of the Rodger-Bowen area are considerable. The northern part of the park is very remote. In particular, the Mountain Creek catchment is very steep and rugged, falling away abruptly from the escarpment of the Gelantipy Plateau and the spine of the Bowen Range. It is virtually untracked and therefore provides opportunities for wilderness-style recreation in an essentially undisturbed environment. Other areas in the north such as the Gelantipy Plateau and Bowen Range offer excellent opportunities for bushwalking and remote camping.

By contrast, the southern portion of the park has high potential for pleasure driving along the Yalmy Road, which would give access to many places of interest including the multi-aged mountain ash forests, Waratah Flat, and the attractive riparian forests along the Rodger River. Already, limited camping, bushwalking, and pleasure driving take place here. The Deddick Trail and other tracks provide four-wheel-drive access through the proposed park. In view of its outstanding recreational potential and the fact that it is already used for activities such as pleasure driving, camping, picnicking, and walking, the Council believes that this part of the park should be managed to accommodate such uses, but recognizes that that may conflict with some wilderness recreational experiences. However, the northern portion of the park, because of its ruggedness and relative isolation, could be zoned for wilderness recreation.

Other park proposals

During the course of its deliberations the Council considered a number of alternative proposals for this area. One proposal suggested that, in addition to the land described above, the whole of the Yalmy catchment in the south and the Swamp Creek and Home Creek catchments in the north-east be included in the park. Although the Yalmy catchment is currently being logged, some conservation groups see it as being a buffer to a Rodger-Bowen wilderness. The Council believes that its inclusion would not enhance the values in the proposed addition to any great extent.

Moreover, the catchment is an important source of timber to the industry at present and will be more so in the longer term when regrowth stands mature.

Several other proposals were put forward. One excludes a major portion of the Rodger catchment, thereby eliminating the potential for protecting its significant undisturbed catchment and other conservation values, although the Mountain Creek catchment would remain intact. Some of the significant floral and faunal values of the Rodger would not be protected in reserves. A third option excluded the whole of the Rodger catchment and portion of the Mountain Creek catchment, thereby eliminating the undisturbed catchment values that are an integral part of the proposed park and the highly significant botanical, zoological, and recreational values of the Rodger River area.

A number of other submissions did not propose any extension to the Snowy River National Park. However, for reasons outlined above, the Council believes the existing park needs such an addition. The area proposed has attributes that warrant its inclusion in a national park.

Two areas that are licensed for grazing and are stocked in some years occur within the proposed park addition.

Recommendation

- A4** That the area of 44 400 ha, shown on Map A, be added to the Snowy River National Park and be used to:
- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments

- (ii) conserve and protect natural ecosystems
- (iii) supply water and protect catchments and streams

that

- (iv) grazing be phased out by 1988
- (v) logging not be permitted
- (vi) hunting and use of firearms not be permitted

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Note:

Occurrences of spinning gum (*Eucalyptus perriniana*) on the southern slopes of Mount Bowen should be protected when consideration is being given to the siting of access roads for timber harvesting and associated operations.

Mooresford addition to the Snowy River National Park

The proposed addition includes several tributaries of Raymond Creek, which contain woodlands of silverleaf stringybark (*Eucalyptus cephalocarpa*) that are not represented in the existing park. These woodlands are a variant of the coastal heathland community and include species that provide colourful wildflower displays in spring. They contain attractive stands of brittle gum (*E. mannifera*), and the uncommon *Pomaderris pilifera* and the rare *Pultenaea polifolia* also occur there. Mooresford Road, the main access route to the southern portion of the Snowy Park passes through this area.

Recommendation

- A5** That the area of 4300 ha shown on Map A be used to:
- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
 - (ii) conserve and protect natural ecosystems
 - (iii) supply water and protect catchments and streams
- that
- (iv) logging not be permitted

- (v) hunting and use of firearms not be permitted
- (vi) legal access to private property enclosed within the park continue to be provided

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Croajingolong National Park

Recommendation

- A6 That the area of 82 130 ha, shown on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977 (see Appendix 1)

and that

- (i) the area of land previously recommended for township purposes at Point Hicks be included in the Croajingolong National Park and consideration be given to providing low-cost accommodation in this area
- (ii) commercial fishing in Tamboon Inlet be phased out by December 1991
- (iii) the boundary of the park be set back 50 metres from the eastern shore of Sydenham Inlet
- (iv) the boundary of the park adjacent to the Mallacoota Aerodrome be relocated to include portion of the area leased by the Commonwealth for aerodrome purposes, and the cleared approach path to the aerodrome (currently within the park) be excluded.

Addition to Croajingolong National Park

The proposed addition incorporates the remainder of the Teal, Dowell, and David Creek catchments in the Croajingolong National Park.

Stands of warm temperate rainforest in these catchments contain occurrences of at least 10 of the State's rare plants. Many of these species are more characteristic of rainforests in New South Wales, but reach the limits of their distribution around Mallacoota Inlet. Others, such as yellow elderberry (*Sambucus australasica*) and prickly tree fern (*Cyathea leichardiana*) also occur in rainforests to the west but are very rare. The bower wattle (*Acacia subporosa*) and daisy bush (*Olearia dentata*) are found in other parts of these catchments away from the rainforest stands. The proposed addition provides full catchment protection to these rainforest communities and establishes a more readily defined park boundary that has greater ecological integrity than the existing boundary.

The juxtaposition of such a large number of rare plants in a relatively small area warrants the inclusion of these catchments in the Croajingolong National Park. The 10 rare plants recorded here are—bower wattle, prickly tree fern, eastern leatherwood (*Eucryphia moorei*), sandpaper fig (*Ficus coronata*), creeping shield-fern (*Lastreopsis microsora*), jungle bristle-fern (*Macroglena caudata*), daisy bush, yellow elderberry, small fork-fern (*Tmesipteris parva*), and oval fork-fern (*Tmesipteris ovata*).

Recommendation

- A7 That the area of 1700 ha, shown on Map A, be added to the Croajingolong National Park and be used to:

- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (ii) conserve and protect natural ecosystems
- (iii) supply water and protect catchments and streams

that

- (iv) logging not be permitted
- (v) hunting and use of firearms not be permitted
- (vi) grazing not be permitted
- (vii) honey production be permitted

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Note:

The Council has approached the New South Wales government with a view to obtaining assistance in protecting the part of the Dowell Creek catchment in that State.

Errinundra National Park

Errinundra Plateau and its surrounding country together form an area of international botanical significance. This area also supports some rare and interesting fauna as well as having outstanding scenic, landscape, and recreational values. Its botanical significance lies in the unique forests around the Goonmirk Rocks, the mixed forests on the Gunmark Range, the large stands of cool temperate rainforests on the plateau and escarpments, and the extensive stands of mature shining gum and brown barrel, which reach their maximum development here. Brown barrel is found nowhere else in Victoria other than in East Gippsland and both species are poorly represented in existing reserves. Available evidence suggests that the plateau might have functioned as a refuge for flora and fauna during past climatic changes, and it therefore has high biogeographical significance.

The Council is proposing establishment of a national park that incorporates the major elements of this unique area. The proposed park is centred on the existing Errinundra and Delegate River Flora Reserves and the Mount Ellery Scenic Reserve along with the adjoining headwaters of the Goolengook River. These features are linked by the headwaters of the Brodribb River. Three major components, the plateau proper, the southern fall, and the northern fall are all represented in the park.

Topography

The Errinundra Plateau is the best and most extensive example in the State of one of Victoria's major plateau land types and, apart from a very limited representation in the Kinglake National Park, is not represented in the existing park system. This land type is more extensive in New South Wales, but has largely been cleared for agriculture there—for example, on the Monaro Tablelands. The Errinundra Plateau is the southern extension of these tablelands and still carries much of its original vegetation.

Catchments

As with the Rodger River-Bowen Range area, several catchments on or adjacent to the Errinundra Plateau have been identified as essentially natural. They include the East Errinundra, East Delegate, Brodribb, and Goolengook Rivers and the Rooty Break and Craigie Bog Creeks. These catchments, representing plateau and dissected upland streams with varying geological and aquatic environments, are all contained in the proposed park, which will thus provide protection for examples of currently unreserved catchment types.

Originating on the plateau and flowing in a southerly direction, the East Errinundra River displays a range of undisturbed aquatic environments—from sub-alpine springs and swamps on the plateau proper through a stream with very steep gradients and spectacular waterfalls on the escarpment, to a substantial foothill river. By contrast, streams traversing the more gently sloping northern fall of the plateau—such as the East Delegate River, Rooty Break Creek, and Craigie Bog Creek—have very different physical characteristics. They are also chemically dissimilar and may therefore support quite discrete aquatic faunal assemblages. The headwaters of the Brodribb and Goolengook Rivers differ from those of the East Errinundra in that they are developed on granitic parent material. Furthermore, the Goolengook River, with its steep headwaters but relatively broad flat valley tract provides a valuable undisturbed example of a stream type that has been cleared for agriculture elsewhere.

Vegetation

The park contains some outstanding botanical features, including the unusual tree form of mountain plum pine (*Podocarpus lawrencei*), which reaches heights of 17 m near the Goonmirk Rocks. The limits of this rare form of podocarp are also within the park: in the north along the East Delegate River, in the south at Cobb Hill, and to the east along Rooty Break Creek.

The trees are some of the oldest reliably dated living plants in the State and are thought to be at least 400 years old.

Straddling the divide between the headwaters of the East Errinundra River and the

Queensborough River the largest stand of rainforest in Victoria also occurs in the park, and is buffered by surrounding wet sclerophyll forest.

The Cobb Hill area contains the most extensive remaining undisturbed example of mature "mixed forest" on the plateau. This forest type includes a continuous understorey of rainforest beneath a sparse eucalypt overstorey; it was relatively common on the south fall of the Gunmark Range, but much of it has been harvested for timber in recent years. The forests are probably the oldest of any of the plateau, as evidenced by the very large specimens of a number of rainforest species. In contrast to cool temperate rainforests further west in the Central Highlands and the Otways, those on the Errinundra Plateau are dominated by southern sassafras (*Atherosperma moschatum*) and black olive berry (*Elaeocarpus holopetalus*). The park includes examples of the vegetation continuum from pure rainforest, through mixed forest, to eucalypt forest.

Overstorey eucalypts in the "mixed forest" stands often display a multi-aged structure, implying that wildfires, when they have occurred, have not been severe enough to kill the mature eucalypts. Riparian occurrences of cool temperate rainforest are well developed along many of the streams in the proposed park, on both the southern and northern falls of the plateau. In the Goolengook River headwaters a transition from cool temperate rainforest to warm temperature rainforest occurs. The biogeographical significance of the area is further enhanced by the fact that populations of *Podocarpus* and *Tasmannia* spp. may be distinct species and therefore endemic to the plateau.

The catchment of the East Delegate River contains a significant representation of the flora of the northern fall of the Errinundra Plateau. In a transitional sequence, the tall wet forests of the Gunmark Range give way to the drier woodlands and grassy flats once common to the Monaro Tablelands. The peppermints, brown barrel, and manna gum occur more frequently here than on the plateau. As mentioned earlier the northern limit of mountain plum pine occurs here also, and the area has the highest diversity of plant species and communities on the plateau.

Within the proposed park also the most easterly stands of mountain ash in the State occur in the East Errinundra catchment and in the headwaters of the Queensborough River. Other major plant communities such as wet sclerophyll forest dominated by shining gum, brown barrel, and messmate are all well represented, as are stands of mature and regrowth alpine ash, particularly around Mount Ellery.

Fauna

The park is known to contain the habitats of a number of highly significant animals, including the long-footed potoroo, sooty owl, powerful owl, Jervis Bay tree frog, Blue Mountains tree frog and recently recognized subspecies of the pink robin. Important factors in the significance of this area for fauna are the age and diversity of forests. Populations of arboreal mammals, which are very sensitive to habitat disturbance, occur in the peppermint and brown barrel forests on the northern fall. Although only very limited survey work has been carried out on terrestrial and aquatic invertebrates on the plateau, a newly discovered species of giant earthworm (*Notoscolex* sp.) has been found and may be confined to areas of mature "mixed forest" on the plateau.

Recreation

Much of the park has outstanding scenic and landscape values and offers a range of opportunities for recreation. The tall sclerophyll forests and rainforests of great antiquity in the area are scenically very attractive, and with improved access could be a major focus for activities such as picnicking, pleasure driving, and short walking trips. The landscape values of the undisturbed catchments on the southern fall of the plateau are particularly high. Spectacular views can be obtained from the summit of Mount Ellery, while Ocean View Lookout in the headwaters of the Goolengook River provides excellent views of this undisturbed catchment and forested ranges all the way to the coast.

Spectacular waterfalls and cascades occur in the Errinundra, Brodribb and Queensborough catchments within the park and many of the riparian environments dominated by cool temperate rainforest are breathtakingly beautiful. The large granite tors and boulders on Mount Ellery provide an added attraction

for visitors, apart from the magnificent views from its summit. The rugged nature of the southern escarpment also provides opportunities for bushwalking in remote undisturbed country.

Other park proposals

In formulating its recommendation for this area the Council considered several options for a park on the plateau. One option would have added the remainder of the Brodribb and Delegate catchments, most of the Coast Range and a further portion of the Goolengook catchment. These areas contain substantial volumes of mature sawlogs as well as extensive tracts of logging regrowth, but would provide additional representations of values within the Council's proposal. Another option linked the Cobb Hill area with the existing Errinundra flora reserve (essentially via the stands of logging regrowth on the Gunmark Range), extended the existing flora reserve to include most (but not all) of the East Errinundra catchment, and added only portion of the Goolengook headwaters to the Mount Ellery scenic reserve. This option would not give protection to the essentially undisturbed catchments described earlier, nor would it include valuable examples of the transitional sequence of vegetation from the very wet sclerophyll forests to the drier peppermint-gum forests typical of the northern fall of the plateau.

Coast range

The Coast Range area was considered for inclusion in the Errinundra National Park. However, the Council determined that it should not be included in the park, but that timber harvesting in the area south of the Musket Creek reference area should be delayed for as long as possible (see Recommendation E16).

Recommendation

- A8 That the area of 16 700 ha, shown on Map A, be used to:
- provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
 - conserve and protect natural ecosystems
 - supply water and protect catchments and streams

that

- logging not be permitted
- hunting and use of firearms not be permitted
- grazing not be permitted
- the environs of the Errinundra road, Greens road and Gunmark road, where they abut the park, be preserved

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Lind National Park

Recommendation

- A9 That the area of 1166 ha, shown on Map A, continue to be included in Schedule 2 of the *National Parks Act 1975*.

Addition to Lind National Park

It is proposed to add three small areas to the existing park to rationalize the boundary with topographic features.

Recommendation

- A10 That the areas totalling 210 ha, shown on Map A, be added to the Lind National Park and be used to:
- provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
 - conserve and protect natural ecosystems
 - supply water and protect catchments and streams
- that
- grazing and logging not be permitted
 - hunting and use of firearms not be permitted
- and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Alfred National Park

Recommendation

A11 That the area of 2300 ha, shown on Map A, continue to be included in Schedule 2 of the *National Parks Act 1975*.

Addition to Alfred National Park

It is proposed to extend the southern boundary of the existing park to include the headwaters of Soda Creek, which contain important stands of warm temperate rainforest which are known to support at least 15 species of lianes. Other sections of the park boundary have been rationalized to follow topographic features. The proposed park also provides valuable habitat for a variety of associated fauna.

Recommendation

A12 That the areas totalling 750 ha, shown on Map A, be added to the Alfred National Park and be used to:

- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (ii) conserve and protect natural ecosystems
- (iii) supply water and protect catchments and streams

that

- (iv) grazing and logging not be permitted
- (v) hunting and use of firearms not be permitted

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

Coopracambra-Kaye National Park

This park incorporates the existing Coopracambra State Park (13 400 ha), Mount Kaye Flora Reserve, Jones Creek Flora Reserve and Beehive Creek Flora Reserve and includes all catchments flowing into the Genoa River upstream of Wangarabell.

Catchments

The Murmuring Creek, Black Jack Gully, and Back Creek catchments have been classified as essentially undisturbed catchments, representing dissected upland streams on sedimentary and igneous parent materials in areas of moderate rainfall. At present only the lower portions of Murmuring Creek and Black Jack Gully are included in the existing Coopracambra Park, while the headwaters are unprotected. Their inclusion in the park ensures their long-term viability as ecological units; moreover they provide a substantial link between the existing park and the Mount Kaye area, which are both botanically and biogeographically highly significant.

Vegetation

The extensive rocky outcrops around Mount Kaye and in the catchments of Back Creek, Black Jack Gully, and the small tributary streams flowing into the Cann River support distinctive heathy scrub communities and several rare species. In addition, the heathland communities bordering tributaries of Black Jack Gully, Murmuring Creek, Back Creek, and Beehive Creek include a number of rare plants. Of the 62 significant species identified in a recent preliminary survey, some 46 are not known in the existing Coopracambra State Park. Four species had not been previously recorded in East Gippsland and one of these—*Mirbelia pungens*—is a new record for the State.

From the available information an area centred on the major peaks around Mount Kaye seems to be the natural limit of distribution in Victoria for both Tasmanian sub-alpine species and eastern New South Wales species. The Mount Kaye-Mount Denmark area and the adjoining Back Creek catchment boast an impressive list of rare plants, including finger hakea (*Hakea dactyloides*), long-leaf bitter pea (*Daviesia wyattiana*), monkey mint bush (*Prostanthera walteri*), New South Wales pomaderris (*Pomaderris ledifolia*), rusty velvety-bush (*Lasiopetalum ferrugineum*), and Tasmanian waxflower (*Eriostemon virgatus*). Shining gum (*Eucalyptus nitens*) also reaches the eastern limit of its distribution at Mount Kaye.

Fine stands of blue-leaved stringybark (*E. agglomerata*), normally a New South Wales species, occur between Mount Kaye and the border. Lowland sclerophyll forest between

Mount Kaye and Mount Coopracambra contains good examples of the typical inland sub-communities of the vegetation type, which differ floristically from those nearer the coast. In particular, the drier rocky ridges support several uncommon species including native passionfruit (*Passiflora cinnabarina*), a liane normally occurring in rainforest margins, and streaked rock orchid (*Dendrobium striolatum*) in the Beehive Creek, Black Jack Gully, and small tributary catchments of the Cann River. Heathland vegetation bordering the tributaries of Black Jack Gully and Murmuring Creek is rich in species and also contains significant plants, including crane's bill (*Geranium neglectum*), the rare sun orchid (*Thelymitra resecta*), and fine examples of apple-topped box (*Eucalyptus angophoroides*). The first two species are normally found in montane areas near streams. These heathlands are also rich in other terrestrial orchids, some of which were not previously known in the general locality. Riparian communities occur in a number of catchments and although they have not been investigated, probably contain significant species.

Fauna

The mature lowland sclerophyll forests in the park contain a high diversity of bat fauna. A total of 14 species have been recorded, including rare ones such as the large-footed myotis, eastern horseshoe bat, and eastern broad-nosed bat. These forests also support a population of the rare masked owl.

The north-western portion of the park extends across the Cann Valley Highway to include known populations of two rare amphibians, the great barred frog and giant burrowing frog.

Recreation

The undisturbed nature of much of the park provides opportunities for wilderness-style recreation—in particular, the Genoa River Gorge and its surrounds, which also offer some spectacular scenery. Excellent views can be obtained from the summits of Mount Kaye, Mount Denmark, Mount Coopracambra, and Mealing Hill. Access through the park is limited, but the W. B. Line offers scope for pleasure driving and picnicking. Attractive waterfalls and cascades occur on a number of creeks in the park, including Beehive Creek,

Back Creek, Black Jack Gully, Murmuring Creek and the Cann River tributaries. The rugged granite outcrops have significant landscape values, particularly when viewed from the Cann Valley Highway.

Jones Creek

The Jones Creek catchment contains fine stands of Gippsland grey box (*Eucalyptus bosistoana*) once common on the fertile alluvial soils along major streams in the region, but now largely cleared for agriculture and a significant area of heathland along the lower reaches of the creek, which is rich in terrestrial orchids and heathland plants. It also includes a stand of silver-leaf stringybark (*Eucalyptus cephalocarpa*). At present only the lower portion of this heathland is contained within the Jones Creek Flora Reserve. The rare she-oak skink and the swamp skink (a notable species) both occur in this heathland habitat.

Other park proposals

A number of other options for additions to the Coopracambra State Park were considered by Council. One of these suggested that in addition to the areas proposed by Council, the headwaters of the Thurra River be included. The Council believes that its broad aim for this proposed extension was to include the major streams and their catchments flowing into the Genoa River, but felt that it was inappropriate to extend into another major catchment such as the Thurra, which flows south to the sea.

Another option suggested linking the Mount Kaye area with the existing Coopracambra State Park via the land adjoining the Cann Valley Highway, while another would have added to this option a major part of the Black Jack Gully catchment. However, these options would not have afforded protection to the essentially undisturbed catchments of Black Jack Gully and Murmuring Creek, nor would they have included some of the important botanical values of these areas.

The proposed park forms part of an area used for grazing agistment, but receives only intermittent use.

The Council believes that the addition of the land described above to the existing Coopracambra State Park warrants the designation of the whole area as national park.

Recommendation

A13 That the area of 32 600 ha, shown on Map A, be used to:

- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (ii) conserve and protect natural ecosystems
- (iii) supply water and protect catchments and streams

that

- (iv) logging not be permitted
- (v) hunting and use of firearms not be permitted
- (vi) grazing be phased out by 1988

and that the area be included in a schedule to the *National Parks Act 1975* and be managed by the Department of Conservation, Forests and Lands.

State, coastal, and regional parks

Lake Tyers State Park

Recommendation

A14 That the area of 2000 ha, shown on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977 (see Appendix 1).

Addition to Lake Tyers State Park

The proposed addition comprises public land west of Pettman's Beach road and south and east of Tyers House road. It includes the coastal reserve east of Lake Tyers, portion of the Ewing Marsh Wildlife Reserve and an area of uncommitted land north of Morass Break road.

Several interesting plant communities occur within the proposed addition, including primary dune scrub along the coast, coastal sclerophyll forest along drainage lines, dominated by southern mahogany (*Eucalyptus botryoides*), and a sub-community of lowland

sclerophyll forest that contains the following unusual assemblage of eucalypts: white stringybark

(*E. globoidea*), silvertop (*E. sieberi*), yellow stringybark (*E. muelleriana*), mountain grey gum (*E. cypellocarpa*), red ironbark (*E. sideroxylon*), red box (*E. polyanthemos*), and blue box (*E. bauerana*). Near the coast the eucalypts occur as stunted woodlands no more than 10 m in height, with an interesting array of understorey plants.

These coastal forests are also noted for their value as food sources for nectivorous birds, including the uncommon scarlet honeyeater, which has been recorded in the area.

Pettman's Beach road is a popular point of access to the Ninety Mile Beach, particularly for surf fishing and other beach activities. It is more appropriately included within the park than used for its present designation as part of a wildlife reserve.

Recommendation

A15 That the area of 1300 ha, shown on Map A, be added to the Lake Tyers State Park and be used to:

- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (ii) conserve and protect natural ecosystems
- (iii) supply water and protect catchments and streams

that

- (iv) honey production be permitted subject to specified conditions
- (v) small quantities of forest produce, associated with the development of the park, would be available from time to time
- (vi) legal access to private property enclosed within the park continue to be permitted

and that it be managed by the Department of Conservation, Forests and Lands.

Note:

The Department of Conservation, Forests and Lands has established several experimental plots in the region that will provide valuable information on the regeneration requirements

of nine eucalypt species. The trials will also provide information on tree growth and the influence of *Phytophthora cinnamomi* on the population dynamics of a mixed-eucalypt forest. This information will assist in preparing management plans aimed at obtaining a species mix more representative of the kind that originally occurred in these coastal forests. One of the trial plots is located in the proposed addition to the Lake Tyers park, and the management plan should ensure that activities associated with this trial—namely, continued monitoring, further experimentation, and fire-protection measures in the adjoining forest—can continue until the research is completed.

Sydenham Inlet–Cape Conran Coastal Park

This park extends along the coast from just east of Sydenham Inlet to Point Ricardo near Marlo. It incorporates the catchment of Dock Inlet and Sydenham Inlet, and is bounded in the north by the Old Coast Road. It includes long stretches of relatively undisturbed coastline.

Sydenham Inlet is a large estuarine lagoon (1000 ha) which is intermittently sealed off from the sea by a sandy barrier. Several geomorphological features associated with the estuary are of State-wide significance, notably the active and abandoned river deltas and the extensive wetlands and tidal channels. Recreational fishing in the estuary and on the ocean beach, boating and water-skiing are popular activities here.

Dock Inlet similarly contains geomorphological features of State-wide significance. Formerly a small bay, it became isolated from the sea by a barrier of sand. Although the sand barrier is low, this coastal lagoon is rarely subject to incursions by the sea and the water is fresh. Stream-flow into the lagoon is permanent and its catchment remains in a near-natural condition, although a management track passes through it. The Dock Inlet system is the only essentially undisturbed example of a catchment on the coastal plain that terminates in a land-locked lake.

The Yeerung River in the west has formed a brackish estuarine lagoon at its mouth, which is also often sealed off from the sea by a sand barrier. This lagoon is popular for swimming and fishing and is readily accessible from the

camping ground near Cape Conran. The river has exposed Palaeozoic metasediments and granite rocks above the lagoon as well as a section of the Tertiary and Quaternary coastal sediments.

Cape Conran is popular for surf fishing and swimming. Snorkelling and diving are popular activities around the rocky outcrops and platforms of the Cape, and Pearl Point. The main headland of Cape Conran comprises a narrow promontory of granodiorite, and on its eastern side presents a readily accessible example of contact between granitic and sedimentary rocks.

Near Cape Conran, the Marlo Plains remain relatively undisturbed and permit studies of the nature of the Pleistocene environments of southern Victoria. The Council has recommended that the Bemm River Education Area (K3) be relocated to the north of Cape Conran (see Chapter K), in order to take advantage of these educational attributes.

Vegetation of the park is a mosaic of banksia woodlands, coastal sclerophyll forests and heathlands in the many seasonally wet depressions. These provide brilliant wildflower displays in the Spring. The numerous rare and interesting plants found here include two tongue-orchids, *Cryptostylis erecta* and *C. hunteriana*, while the near-coastal heaths include sword bossiaea (*Bossiaea ensata*) and, in swampy areas the bush-pea (*Pultenaea paludosa*).

The low heaths, woodlands and forests on the coastal dunes form the habitat of the smoky mouse, which has a wide but disjunct distribution in Victoria. The rare ground parrot also occurs in the coastal heaths, while the fresh-water swamps have resident populations of the long-necked tortoise. The glossy black cockatoo has been observed feeding in casuarinas in the northern part of the park.

Proposed coast road

It has been suggested that a coast road of two-wheel-drive standard be established between Cape Conran and Bemm River. In concept, a coast road should provide the motorist with views of the coastline and, to achieve this, should be routed as closely as possible to the shoreline. For much of the coast between Cape Conran and Bemm River, however, such a road would need to be sited on unstable coastal dunes

to provide the best views of the foreshore. To align the road behind the dunes would virtually eliminate any views of the coastal scenery.

However, the Council believes that the important conservation values of the heathlands and essentially undisturbed catchment in this portion of the park should not be degraded or compromised by any access developed between these centres.

Further information regarding the concept of a coast road appears in Chapter L (Recreation).

Boat ramp—Cape Conran

Small craft have only limited access to coastal waters in eastern Victoria, and the existing boat ramp at West Cape Conran is inadequate in terms of both safety and capacity. A large number of people use the ramp throughout the year, and at the peak of the holiday season facilities for the parking of boat trailers and access to the ramp become crowded. Under adverse weather conditions boat retrieval is slow and dangerous. The Government has decided to duplicate the existing ramp to aid boat launching and retrieval.

However, alternative facilities for the retrieval of small craft, which can be used should the West Cape ramp be closed by an adverse weather change, should be provided. Investigations should include sites that would accommodate the alternative facilities and would have only minimal conflict with protection of the coastline and other recreational activities.

Such development should be considered in conjunction with the strategy plan now being prepared for Cape Conran.

Recommendation

A16 That the area of 11 100 ha, shown on Map A, be used to:

- (i) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (ii) conserve and protect natural ecosystems and features listed below—in particular, the conservation values between the Yeerung River and Pearl Point including

- the diverse flora and fauna associated with the heathlands and coastal forests
 - the habitat of the smoky mouse and ground parrot
 - the essentially natural condition of the catchment and environs of Dock Inlet
- and
- the wetlands associated with Sydenham Inlet, which are significant wildlife habitats, particularly for waterfowl

that

- (iii) grazing and timber production not be permitted
- (iv) camping be permitted to continue at sites approved by the managing authority
- (v) the managing authority zone the park to accommodate the legal recreational activities traditionally associated with the area, such as surfing, fishing, camping, walking, and hunting in season
- (vi) the managing authority investigate the provision of boat ramp facilities at Cape Conran, which may be used to supplement the existing ramp on West Cape Conran

and that the area be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation, Forests and Lands.

Notes:

1. The Department of Conservation, Forests and Lands is investigating the establishment of additional accommodation facilities near Cape Conran.
2. The Council considers that an investigation should be conducted into the establishment of a road linking Bemm River and Cape Conran, bearing in mind the need to protect the nature conservation values of this portion of the park (see Recommendation L8).
3. The coastal park includes land south of the Marlo aerodrome, which contains vegetated sand dunes and swales. This land is currently managed by the Committee of Management of the aerodrome but is not required for aerodrome purposes.

4. A 50-m buffer along the eastern shore of Sydenham Inlet is also included in the coastal park; this will require an adjustment to the western boundary of the Croajingolong National Park (see Recommendation A6).

Mount Raymond Regional Park

Recommendation

- A17** That the area of 800 ha, shown on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977 (see Appendix 1).

Marine parks

During the process of formulating its proposed recommendations the Council evaluated the available information (including that contained in submissions) on offshore zones around East Gippsland, with a view to determining their conservation significance.

Very little biological information is available for most offshore zones abutting the State and it is therefore difficult to assess the conservation significance of specific areas. This is particularly so for East Gippsland. Thus, the Council has not recommended the establishment of marine parks.

It does, however, recognize that East Gippsland is likely to contain significant areas that have been little modified, particularly since much of the adjacent coastline is largely undisturbed and most catchments remain predominantly

forested. Three distinct marine and intertidal substrates are known to occur there: granite, sandstone and slate, and unconsolidated sands. There may be a need to protect representative examples of each of these, although a comparison of similar habitats elsewhere in the State and in Australia would need to be undertaken. For example, it is known that some intertidal areas support marine fauna more commonly associated with New South Wales waters. In this regard, the Australian National Parks and Wildlife Service published an 'Inventory of Declared Marine and Estuarine Protected Areas in Australian Waters' in 1984, which provides valuable information on existing protected areas and could form the basis of any such comparison.

The Council believes that a State-wide survey of marine ecosystems should be undertaken as a matter of priority to identify those that are significant.

Council is also concerned that very little research has been done on the effects of commercial fishing on these ecosystems, although some information is available on the impact that commercial fishing has on the populations of larger species.

Recommendations

- A18** That a State-wide survey of marine ecosystems be undertaken as a matter of priority to identify representative and significant marine environments.
- A19** That research be conducted into commercial fisheries to ascertain whether harvesting levels are environmentally acceptable and sustainable in the long term.

B. Reference areas

Reference areas are tracts of public land containing viable samples of one or more land types that are relatively undisturbed and that are reserved in perpetuity. Those concerned with studying land for particular comparative purposes may then refer to such areas, especially when attempting to solve problems arising from the use of land. Reference areas include typical examples of land types that have been modified elsewhere for productive uses such as agriculture, mining, or intensive timber production. The course and effects of human alteration and utilization can be measured against these relatively stable natural areas.

In common with references and standards used in other fields, these areas must not be tampered with, and natural processes should be allowed to continue undisturbed. Reference areas should be sufficiently large to be viable and should be surrounded by a buffer, the width of which would vary according to the activity occurring on the adjacent land. The role of the buffer is to protect the areas from damaging or potentially damaging activities nearby. It will also protect important values in the surrounding land from potentially damaging natural processes occurring within the reference area.

Access should be restricted, and experimental manipulation should not be permitted. Setting aside such areas will enable continued study of natural features and processes: for example, fauna, hydrology, and nutrient cycling. These studies are important in increasing our knowledge of the ecological laws and processes on which humanity's survival may ultimately depend.

The preservation of some species in the long term requires the setting aside of areas free from human interference (in the form of productive or recreational use of land). These areas preserve a valuable pool of genetic material. Wild species are often used to genetically strengthen inbred races of domestic plants and animals—and the future use of gene pools will probably expand far beyond this.

The *Reference Areas Act* 1978 provides for reference areas to be proclaimed by the Governor-in-Council, and for the Minister to issue directives for their protection, control,

and management. An advisory committee, established under the Act, assists the Minister.

The selection of the reference areas listed here is based on current knowledge of the land types in the study area, and additional areas may be needed as better information on ecology and land use problems becomes available.

Existing reference areas

Recommendations

B2– B4, B6, B8– B14 That the areas listed below and indicated on Map A continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

B2 Gelantipy Plateau (430 ha)

B3 Mountain Creek (1520 ha)

B4 Zig Zag Creek (600 ha)

B6 Big River (400 ha)

B8 Barga (1030 ha) (this reference area was originally named Camp Creek, but has been renamed to avoid confusion between the two Camp Creeks in the Croajingolong National Park, and the other passing through the Baawang Reference Area)

B9 Yambulla (380 ha)

B10 Merragunegin (660 ha)

B11 Jones Creek (425 ha)

B12 Baawang (600 ha)

B13 Benedore River (1130 ha)

B14 Seal Creek (905 ha)

Relocation of Reference Area B1— Gattamurh Creek

A vehicular track leading to Ventry's hut on the Gattamurh Creek passes through the existing Gattamurh Creek Reference Area. The new site for the reference area does not contain any tracks, and is mostly on the Tubbut land system, as was the original area. (Since publication of the final recommendations for

the East Gippsland area in March 1977 the boundaries of the land systems in this area have been revised in consultation with the Land Protection Division.)

Recommendation

- B1** That the Gattamurh Creek Reference Area be relocated to the site described below and indicated on Map A, and be renamed the Beehive Creek Reference Area

and that it be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Beehive Creek (590 ha)

Geology: Lower Devonian granite and hornblende diorite, Ordovician sediment. Topography: steep slopes. Elevation: 160-940 m. Rainfall: 800 mm. Vegetation: white box and white cypress pine woodland and open forest I and II. Land systems: Tubbut and Wyangil.

Addition to Reference Area B5— Concordia Gully

The enlarged reference area incorporates more of the Victorian portion of the Concordia Gully catchment. This is the only remaining example of an essentially natural intermittent plateau stream in East Gippsland.

Recommendation

- B5** That the enlarged Concordia Gully Reference Area (840 ha) shown on Map A be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Council notes that activity associated with mineral exploration and mining has occurred in this reference area in the past.

Addition to Reference Area B7— Musket Creek

The existing Musket Creek Reference Area contains only one side of the Musket Creek catchment as well as some additional country to the north. The addition of the southern side of the Musket Creek catchment means that the

reference area includes a complete catchment as well as a variety of vegetation communities typical of the coast range.

Recommendation

- B7** That the boundary of the Musket Creek Reference Area (645 ha) be relocated as shown on Map A and the area be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Additional reference area

Recommendation

- B15** That the area described below and shown on Map A:

(a) be used to maintain natural ecosystems as a reference to which those concerned with studying land for particular comparative purposes may be permitted to refer, especially when attempting to solve problems arising from the use of land

(b) be surrounded by a buffer, and that delineation of the buffer be by joint arrangement between the advisory committee and the land manager of both the area itself and of the land adjacent to the reference area

and that

(c) activities (such as grazing, exploration for minerals, mining, logging, and beekeeping) that conflict with the purposes of a reference area not be permitted, and any such activities in the reference area described below cease when these recommendations are adopted.

Winnot Creek (1290 ha)

Geology: Lower Devonian granite. Topography: moderately steep slopes. Elevation: 380-1000 m. Rainfall: 950 mm. Vegetation: messmate—gum and silvertop—stringybark open forest III, stringybark—red box—silvertop open forest II, and yertchuk—red stringybark open forest I and II. Land system: Kowat.

To be managed by the Department of Conservation, Forests and Lands.

C. Wildlife

Wildlife conservation—a land use in its own right—cannot always be separated from other land uses such as timber production, forest grazing, water production, and recreation. These types of use often require large areas of land, much of which can be managed to retain its value as wildlife habitat. In the long term, wildlife conservation depends upon conservation of habitat covering areas that are sufficiently large and diverse to support genetically viable populations of species.

Animal habitats are generally described in terms of vegetation communities, although other characteristics—such as vegetation structure, ground cover, water depth, salinity, rock outcrops, and hollow trees—are also important. In the study area some 24 major animal habitat types have been identified, ranging from coastal heaths and estuaries, wet sclerophyll, dry sclerophyll, and lowland sclerophyll forests, to warm temperate and cool temperate rainforests.

The Vegetation map of the study area illustrates the diversity of habitats and shows that no single community covers an extensive uninterrupted area, but rather that each community or habitat tends to be repeated over a wide area as part of a complex mosaic. This pattern is largely determined by the diversity of climate, soils, physiography, and aspect.

The distribution of an animal species depends on its behavioural and physical requirements for food, shelter, and breeding sites. Many species can utilize a range of habitats and consequently are widely distributed throughout the area. Some occupy their environmental range as residents. Others, such as certain bird species, are not year-round residents but migrate in and out of the area at regular intervals. Other birds visit the area infrequently in nomadic movements, while yet other species move between high and low altitudes with the seasons. It is obvious therefore that the conservation of fauna presents many difficulties, even for those relatively few species whose life history and behaviour are understood.

Council considers that wildlife conservation is an important consideration in the management of the entire area and that management plans

should make provision for the conservation of wildlife. This is especially important for animals that are essentially restricted to a particular habitat for feeding and breeding. The ground parrot, for instance, is a ground-dwelling species restricted to sedgeland and heathlands near the coast.

The activities of man in modifying the natural environment have resulted in changes in the distribution and abundance of many species and some species have become extinct. These changes have depended upon the nature and severity of the modification, the particular habitat requirements of the species, and its adaptability to change.

The precise effects on many species, however, are not well documented. Council has recommended elsewhere in this report that principles relating to the conservation of fauna be adopted for land uses that could significantly affect wildlife values. The Council considers that further research into the ecological requirements of species is necessary to determine the effects of various land management practices, particularly those where management is oriented towards more competitive uses such as timber production, forest grazing, and intensive recreation. The results of such research may mean the modification of management practices in some areas if wildlife values are to be adequately considered.

The many streams and wetlands of the study area provide specialized habitat for a large group of birds, fish, and crustaceans, and some mammals. They also form important elements of the scenery of the region.

Although some forms of land use are compatible with fish and wildlife conservation, it is necessary to set some areas aside specifically for their conservation, and for developing wildlife conservation techniques.

These areas may be selected for conservation of species that the community harvests. They may contain the habitat of endangered species or they may have specialized breeding grounds or a high species diversity, or be of educational, recreational, or scientific interest. They may also be selected because of their ecological

significance for (or regional representation of) a species or faunal association, or for their value as a stop-over for migratory or nomadic species.

In all wildlife reserves the responsibility for the suppression of fires remains with the Department of Conservation, Forests and Lands, and fire-prevention measures will be carried out where necessary.

The study area supports populations of a number of significant species, but for various reasons they cannot be protected simply by setting areas aside in reserves. This situation applies particularly to the little tern population that, although considered rare, ranges along much of the East Gippsland coast.

In recent years the breeding success of this species has declined, due in part to human disturbance of the breeding sites, which are usually located on exposed ocean beaches. Breeding usually takes place in the summer months when large numbers of people are using these and adjacent areas for recreation. It is not practical to reserve each particular breeding site, as these may vary from year to year. The Council believes it is more appropriate to identify the sites being used each year and to designate them as "closed zones" during the breeding season. The Council also endorses the campaign by the Department of Conservation, Forests and Lands to educate visitors about the need to ensure that little tern breeding colonies remain undisturbed.

The other species of particular concern is the long-footed potoroo. Very little is known about the habitat requirements or the life cycle of this animal and the size of the population is also uncertain. Research on this species is currently under way in East Gippsland, focused on the small colony in the vicinity of Bellbird Creek. The potoroo is known to occur in the Rodger River extension to the Snowy River National Park and possibly in the Errinundra National Park, but, as its current status is so uncertain, the Council considers that timber harvesting should be suspended in the Bellbird Creek area until the research program is completed. Areas of particular concern include the headwaters of the Bellbird Creek catchment north of the Princes Highway as well as adjacent areas in Falls Creek, Watchmaker Gully, and Wire Grass Creek south of the Highway.

Existing Wildlife Reserves

Recommendations

- C1- That the areas indicated on Map A and
C3 listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

C1 Ewing Marsh (6700 ha)

Note:

Portion of the area previously recommended as the Ewing Marsh Wildlife Reserve is now proposed for inclusion in the Lake Tyers State Park (see Recommendation A15).

C2 Lake Corringale (800 ha)

C3 Lake Curlip (980 ha)

Addition to Lake Curlip Wildlife Reserve

It is proposed to extend the Lake Curlip Wildlife Reserve to include the lower reaches of Cabbage Tree Creek and a small wetland south of allotment 45, Parish of Orbost East.

Recommendation

- C4 That the area of 100 ha incorporating the frontage of Cabbage Tree Creek upstream to its junction with Emu Creek, and Cabbage Tree Lake be added to the Lake Curlip Wildlife Reserve (C3).

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation, Forests and Lands.

Note:

Portion of this area was previously included in the Cabbage Tree Creek Flora and Fauna Reserve (F4).

Wildlife Management Co-operative Area

Some areas have high values for wildlife conservation as well as capabilities for other uses. Where land tenure and management are oriented towards the other uses, special consideration will need to be given to the

protection of wildlife values. This will require some modification of the aims of management and can be achieved by co-operation between the responsible authorities.

In order to provide for the best use and management of such areas, it is proposed that they be declared wildlife management co-operative areas under the provisions of the *Wildlife Act 1975*. A management plan for each area will be necessary in order to ensure that the wildlife values are adequately protected. The plan would maintain the jurisdiction of the respective government departments and agencies over the area and the activities that take place within it.

Recommendation

C5 That the area described below and shown on Map A be used for the conservation of wildlife, water management, commercial fishing, and a variety of recreational activities

that

in order to protect the wildlife values associated with each area, the Department of Conservation, Forests and Lands prepare a management plan in consultation with the appropriate government departments with responsibility for various activities associated with the area, and then submit the plan to them for agreement

and that it be declared a Wildlife Co-operative Area under the *Wildlife Act 1975*.

C5 **Mallacoota Inlet (2600 ha)**

Mallacoota Inlet is a significant natural resource. It provides habitat for a wide

range of flora and fauna, caters for a number of commercial activities including fishing, and provides opportunities for a variety of recreational pursuits including fishing, boating, and swimming. The Inlet is also a major landscape feature and provides the focus for planning strategies around its shores, particularly at Mallacoota township.

Both commercial and recreational fishing are important in Mallacoota Inlet as they both generate income for the local community. In this regard, both the Genoa and Wallagaraugh Rivers are important spawning grounds for fish and the Inlet is a major nursery for young fish of many species. These values can be affected by declining water quality, increased sedimentation, damage to spawning or nursery areas, and overfishing. Land use in the catchment areas will therefore need to be monitored and adverse impacts minimized.

Changes in the natural system that affect fish populations will also affect other species in the food chain, particularly the invertebrate fauna and birdlife. A wide variety of birds depend on Mallacoota Inlet, some of which are listed in the Japan-Australia Migratory Bird Agreement, which requires both governments to 'endeavour to take appropriate measures to preserve and enhance the environment of listed species'.

Portion of the inlet is a proclaimed port, and boating activities are controlled by the Shire of Orbost in consultation with the Department of Conservation, Forests and Lands.

D. Water production

Local catchments are very important for water production, both for domestic consumption and for irrigation water supply. Orbost, Marlo and Newmerella receive water from the Rocky River and this can be augmented by supplies from the Brodribb River. The townships of Cann River and Bemm River obtain water from the Cann and Bemm Rivers respectively and Mallaoota draws supplies from the Betka River.

Water for irrigation is drawn mainly from the Snowy, Genoa, and Cann Rivers.

Current management and use

No catchment in the study area is used solely for water production. Most are utilized for hardwood timber-harvesting, recreation, and other forest uses, as well as for agricultural pursuits on freehold land.

Land use planning

Council notes that the degree of land use planning varies between catchments. The Rocky River, Cann River, Betka River, Bemm

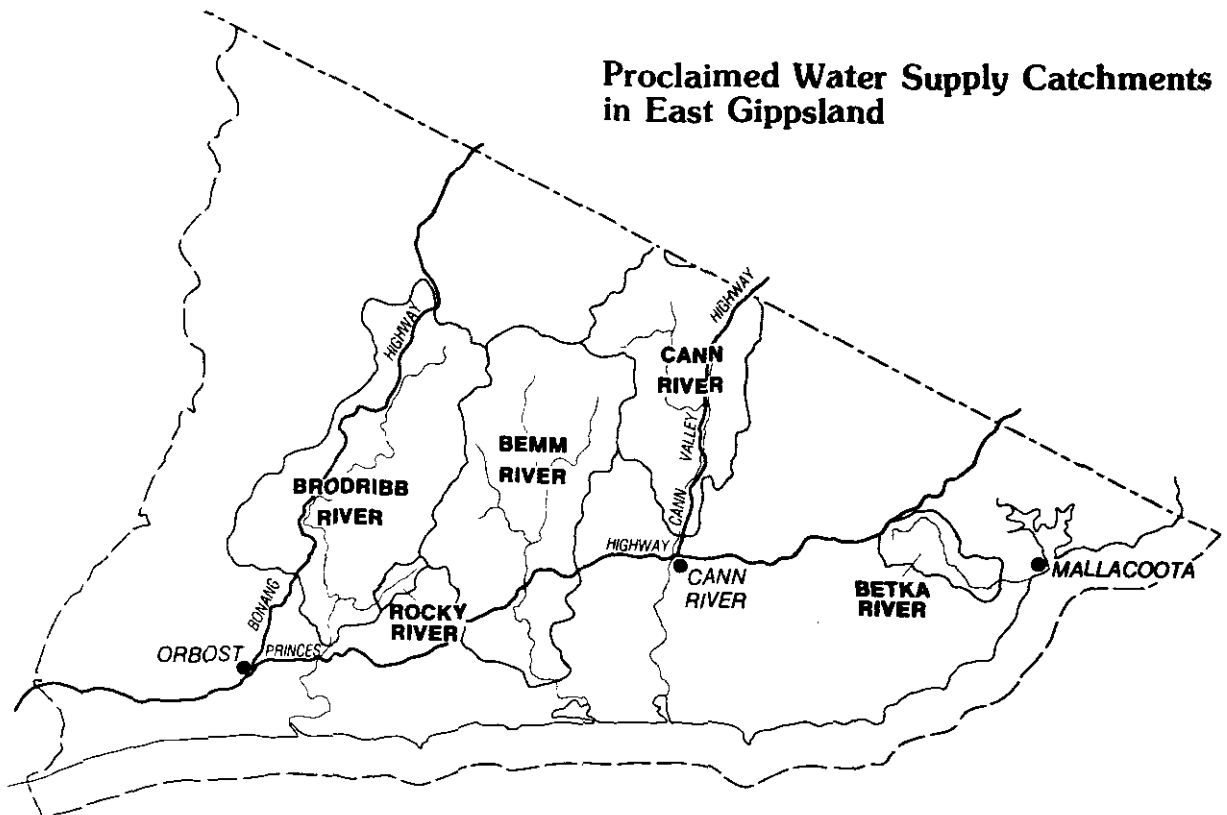
River, and Brodribb River water supply catchments have been proclaimed; but a land use determination exists only for the Rocky River catchment.

Council maintains that all domestic water supply catchments should be investigated and, where appropriate, recommended for proclamation in order to ensure a uniform procedure for land use planning within these areas. Council notes that all catchments used for town water supply in East Gippsland have now been proclaimed.

Catchment land

Recognizing that the prime water-producing areas of the State coincide with the principal mountain and forested areas, and that these areas together with inland water bodies form major attractions for recreation, the Council believes that, in many areas, catchments can be managed for a range of uses consistent with the provision of adequate protection of the water resources. Recreational use of storages, where it is permitted, must be carefully controlled to

Proclaimed Water Supply Catchments in East Gippsland



ensure adequate protection of water quality, and responsibility for this must remain with the water supply authority.

The Council realizes that the optimum combination of land uses for catchments will vary from one land type to another; a particular use that may not impair the quantity, distribution, or quality of water yield in one instance may have a profound effect in another. Changes in land use, which could detrimentally affect the quality, quantity, or distribution of water supplied from a catchment, should only be made following full consideration of the benefits and disadvantages associated with the various land use options. These considerations should take account of the interests of the groups likely to be affected by any changes as well as broader regional and State-wide issues.

Where there is a multiplicity of uses in a catchment supplying water used for power generation or for domestic, industrial, or irrigation purposes, the catchment should be recommended under section 5 (1) of the *Land Conservation Act 1970* to be proclaimed under section 22 (1) of the *Soil Conservation and Land Utilization Act 1958*.

After proclamation, and following consultation with the Land Conservation Council, a land use determination may be made for a catchment, under section 23 of the *Soil Conservation and Land Utilization Act 1958*.

This specifies the most suitable uses of all land in the catchment, and includes delineation of protective strips around storages and along major watercourses.

The Council anticipates that controls over land use in water supply catchments will be incorporated in new land protection legislation currently under discussion.

Council believes that in most situations it is not necessary for a water supply authority to control and manage all land in its water catchment. Authorities with land management responsibilities within a proclaimed catchment should be conscious of the implications of management decisions on water production and should consult, co-operate, and reach agreement with the water supply authority and the Soil Conservation Authority regarding the type, location, and timing of management activities.

Buffer zone

The water supply authority should control and manage a buffer zone (defined in the land use determination) around storages and diversion works. This buffer zone is separate from the protective strips along watercourses, which, although important for water supply protection, would not by themselves form a manageable unit.

In addition the water supply authority should control and manage the storages and the areas on which capital works are situated, together with any other areas that may be needed for efficient management.

Each catchment and water supply system has individual characteristics and the determination of the buffer zone will need to take account of these differences. In determining the extent of the buffer zone, consideration should be given to factors such as ground slope, soil type, vegetative cover, adjoining land use, types of facilities available for treating the water, end-use of water, detention time in the storage, and the need to control public use of the storage and its immediate surrounds. The buffer zone should be large enough to reduce entry of most pollutants into the storage by way of filtration of overland flow, absorption through the soil, and assimilation in watercourses. The desirability of the buffer zone being a practical management unit should also be taken into account.

In some instances it may not be practical for the water supply authority to manage all, or part, of the buffer zone. In such cases agreement should be reached between the adjacent land manager and the water supply authority at the time of a land use determination. The agreement may include leaving the management of the buffer zone with the adjacent land manager on the basis that it would be managed with the prime object of protecting the water quality.

Water quality, yield, and regulation

It is possible to improve the quality of water by partial or complete treatment—at a cost. It must, however, be recognized that the higher the original quality of the water, the cheaper and more efficient is the treatment and, in most cases, the more acceptable the end product.

In many catchments it is already difficult to maintain existing water quality. This problem is likely to become even greater as pressures to allow various forms of land development and use of natural resources increase. Even with properly planned and controlled land use in catchments it is probable that many water supply authorities will consider it necessary to at least disinfect water supplied from their storages. Indeed, many authorities already employ such treatment.

The report "Victoria—State of the Environment" (April 1986) noted, however, that only 7% of town water supplies comply with World Health Organization bacteriological standards all the time. Council recognizes that a number of water supply systems need some form of treatment now and that the others will need to consider some form of treatment in the future. In order to provide for this requirement, Council believes it is important for the government to establish long-term policies to maintain water supply of a satisfactory quality, and notes that the Department of Water Resources' discussion paper—"Strategy Plan to Upgrade Drinking Water Quality"—addresses these issues.

It is also vital to safeguard the quantity and timing of yield. Catchments must be protected from loss of infiltration capacity, damage to other hydrologic properties, soil erosion, and contamination from chemical or biological sources.

Proper management of land uses within catchments is extremely important and recognition must be given to the need for high levels of protection, particularly in the ecologically sensitive areas. Values such as water yield, quality, and flow regime must be of major concern when implementing recommendations for public land within catchments. The Council recognizes the need for research to provide additional information that can be used in formulating management guidelines.

Additional water needs

Future water needs for domestic, stock and irrigation purposes may require the construction of additional water storages.

The Mallacoota Water Board is considering proposals to increase its water storage capacity.

In the planning for this and any other such proposals, the possible effects of storages and their water releases on the ecosystems, in particular the effects on estuaries and on fish and wildlife habitat downstream including effects on free passage of migratory fish species, should be determined and taken into account. The Council recognizes the high conservation value of the Betka River with respect to its native fish population and significant aquatic habitat values. It therefore believes that priority should be given to preparing a land use determination for its catchment, taking into account its conservation values as well as water quality and yield. The construction of an on-stream storage on the Betka within the Croajingolong National Park is inappropriate and an option least favoured by the Council. Other alternatives should be thoroughly investigated.

However, the Council appreciates that it will probably be necessary to develop additional facilities associated with such schemes, but cannot make specific provision for those developments until definite proposals are made. Their environmental effects should be assessed before proceeding. In most cases an Environment Effects Statements is now required as part of the planning of any new major storage.

Recommendations

- D1-** That the water production areas
- D3** indicated on Map A, continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.
- D4-** That in the case of the locations listed
- D5** below and shown on Map A (these locations being within catchments for which no land use determinations have been made) the present tenure and management of public land continue for the time being

and that, once a land use determination has been made, the following areas:

- (i) the storage areas
- (ii) diversion works
- (iii) associated facilities
- (iv) the buffer zones around diversion works and storages, as defined in the land use determination

- (v) any other allotments considered necessary

be used for

- (a) water supply purposes
- (b) other activities permitted by the water supply authority after consultation with the Soil Conservation Authority and the Environment Protection Authority

and that these areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* for water supply purposes, and be managed by the water supply authority named.

Notes:

1. The primary object of management of the buffer zone must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses in the buffer zone. In such cases the principles of management must be agreed upon by that authority and any other authorities concerned.

2. In some instances it may not be practicable for the water supply authority to manage all or

part of the buffer zone. In such cases agreement should be reached between the appropriate land management authority and the water supply authority at the time of a land use determination. The agreement may include leaving the management of the buffer zone with the adjacent land management authority on the basis that it would be managed with the prime object of protecting the water quality.

3. The Council considers that prospecting under a Miner's Right and fossicking should not be permitted on land under the control of water supply authorities, around storages and facilities, etc.

D4 Brodribb River; Orbost Water Board

D5 Bemm River; Orbost Water Board

D6 That, in the case of various off-river storages and facilities for domestic water supply purposes (not individually listed), these and their associated reserves remain under existing tenure and control.

E. State forest and timber production

State forest

The larger areas of forested public land in the State that were not incorporated into parks, or set aside in various reserves or for softwood production, were in the past designated by the Council as either areas for hardwood timber production, or as uncommitted land. In the Council's final recommendations for the Alpine Area-Special Investigation, published in November 1983, it was proposed that such forested land be managed as a single unit.

The Council decided to refer to this land as 'State forest', as it believes that term best describes public land in timber production areas and uncommitted land, even though this may contain a range of vegetation types from tall mountain forests through to woodlands, mallee scrub, heathlands and swamplands. The name is used only in a descriptive sense rather than as a term defined in the *Forests Act* 1958.

State forest comprises a mosaic of forests of varying productivity, and the separation of land into timber production areas and uncommitted land has tended to reinforce the belief that the State's commercially productive hardwood forest is entirely located within hardwood production areas and that timber production is the sole object of management there. In fact, a significant volume of commercial timber is extracted, in conformity with Council's recommendations, from uncommitted land; at the same time, hardwood production areas are managed for a range of uses as well as for wood production.

Although many of the outstanding natural features and values occurring on public land are included in parks and reserves, the hardwood production areas and uncommitted land contain significant water production, landscape, historical and conservation values. Many rare plants are found in State forest and, considering it occupies about two-thirds of all public land, it is of major significance as faunal habitat. The term 'hardwood production' implies quite erroneously that such areas have few values other than for timber production, while the term 'uncommitted land' belies the significance of this land for many different uses including timber production.

The Council has defined the area of State forest within the study area and, in line with the concept of unified (and) co-ordinated management, believes it would be appropriate for all State forest to be administered under one act and be securely reserved under a single land tenure incorporating provisions similar to those currently applying to land administered under the *Forests Act*.

Timber production

Since the publication of the Council's proposed recommendations, the National Institute of Economic and Industry Research (NIEIR) has prepared an independent assessment of the proposals, and the government has released its Timber Industry Strategy.

The Timber Strategy addresses the future of the industry in the State and deals in some detail with aspects of the operation of a timber industry in East Gippsland. The Council's proposals, which support the general thrust of the strategy as it applies to East Gippsland, provide for a land base from which a wood resource could be supplied.

The Council believes that the existence of a viable timber industry in East Gippsland in the long term depends upon achieving a continuity of resource until additional wood can be supplied from the area's regrowth forests. As the strategy states, this will only be achieved through a reduction in the annual cut to a level that can be sustained over the next 40 or so years.

For reasons outlined earlier in these recommendations, the Council has proposed extensive additions to the existing national and State parks in East Gippsland. It recognizes that this will cause substantial timber resources to be withdrawn from availability and this will, unless alternative employment opportunities are created, add to the already significant decline in employment opportunities associated with a lowering of the annual cut to a sustainable level and the expected increases in labour productivity.

Also, the Council is concerned about the long-term prospects for a regional economy in which

timber production will continue to play an important part. It believes that its recommendations should allow for the wood-production potential of the forests available for this purpose to be realized, where this can be done within defined environmental guidelines.

The Council is aware of the serious concern with which pulpwood harvesting is regarded by some sections of the community. It believes, however, that—although the employment base of the region will be broadened in the future by expansion in the tourism sector and eventually by the further processing of wood products to produce value-added goods—over the next few years the best prospects for the creation of substantial employment are associated with the utilization of the wood residues left and burnt after the completion of sawlog harvesting.

In the longer term, Council believes that each of these sectors can make a significant contribution to the regional economy. A Regional Employment and Economic Development Committee has been established by the Government to examine job creation and economic strategies for the region.

Harvesting and sale of timber for pulpwood should only occur in those areas harvested for sawlogs. This should take place only after a number of processes referred to in the Timber Industry Strategy and in this document have been completed and effective monitoring mechanisms have been established to ensure that the harvesting of wood is tied solely to the supply of sawlogs.

The NIEIR study

Following the preparation of proposed recommendations, the Council engaged the National Institute of Economic and Industry Research to carry out an assessment of the economic and employment effects of the proposals. The NIEIR findings were published as a report 2 weeks after the Council's proposed recommendations and were therefore available as an information source for people preparing submissions.

Various groups and individuals made reference to the report in submissions to the Council, as does the recently announced Timber Industry Strategy. Its summation is attached to these recommendations as Appendix 2.

The report indicated that the major reason for a decline in timber employment levels was the need to reduce the annual cut to a sustainable yield. With sawlog-only operations, the 580 people currently directly employed in the East Gippsland timber industry would fall to 220 by the year 2001 with a 10-year phase down. A further 60 jobs would be lost over this time due to productivity gains (estimated at 2 per cent) while the loss of timber in new parks would reduce potential employment opportunities by a further 70.

The report assesses some of the further processing uses for which East Gippsland timber species may be suitable. It draws heavily on information and advice supplied by the Department of Conservation, Forests and Lands and the Division of Chemical and Wood Technology in CSIRO.

Almost all value-added products need seasoning, and substantial capital investment is required. To obtain an adequate return, a mill requires a throughput of some 20 000 to 30 000 m³ if it is processing within, and exporting from, the region.

The report made mention of various timber products, requiring further processing, that could be produced using East Gippsland timber species. It indicated that the pressure of a declining resource base, and a greater difficulty in supplying unseasoned larger-dimension timber, will push the industry in East Gippsland towards further processing.

The report indicated that further processing of green hardwood timber is likely to add about 50 jobs in the timber industry over the next 10 to 15 years.

According to NIEIR the best prospect for the creation of employment is associated with the introduction of intergrated harvesting (harvesting of sawlogs and pulpwood). Using a 2% productivity increase and taking account of the proposed parks, the Institute estimated some 360 people could be directly employed in the timber industry by the year 2000, with potential employment of more than 500 when allowing for further processing and the possibility of a chipmill being established. The consultants concluded that, with a sustainable output of more than half a million tonnes of pulpwood from East Gippsland, a chipmill could be established within 5 years.

The Institute also examined the prospects for other employment sectors. It pointed out that tourism was the only growth sector in the regional economy, expanding at about 4 to 5% per year with this growth likely to continue, provided suitable facilities are developed and the area is promoted by both local and State governments. The consultant's report indicates that park proposals would have an almost immediate impact on the numbers of tourism-related government jobs. The additional requirements for park management are expected to increase this employment component from about 25 to 35 full-time jobs by about 1991. This figure is a minimum and could be expected to rise with increasing intensity in the use of parks. The principal impact on tourism industry employment, however, would occur in the private sector through expenditure by tourists.

Altogether, the Institute projects an increase in direct employment in the tourism industry from between 125 and 135 full-time jobs in 1986 to between 240 and 265 jobs by the year 2001—that is an increase of 115 to 130 jobs.

Its projected employment figures appear in Table 2. These predictions reflect the significance the Institute attaches to integrated harvesting and show the increase in employment if pulpwood is taken from forests carrying lower sawlog volumes as well as from the better-stocked forests. In fact, assuming full integrated harvesting and the council's park proposals, the level of potential employment could be greater than present employment in the timber and tourism sectors. The projections

shown in the table consider only the two economic base sectors likely to be affected by the council's recommendations—that is, timber and tourism.

As the Institute indicated, the employment implications of the move to a sustainable annual cut will depend strongly on the phase-down strategy adopted. They considered several phase-down options, ranging from an immediate phase-down to sustainable yield through to a 10-year phase-down period. They found that, as the phase-down period shortened the initial employment losses rose. Social and economic disruptions would be greatest under the most rapid phase-downs. The longer phase-down period of 10 years favoured by the Institute would allow:

- less job loss during the phase-down, with less social and economic disruption (for example, more time for capital and labour to adjust to change)
- more opportunity for positive regional development initiatives to be implemented

Timber Industry Strategy

The government released a Timber Industry Strategy in August 1986. The strategy sets new directions for forest management and timber production in Victoria and is the culmination of a process that commenced in 1984 with the appointment of Professor Ian Ferguson to conduct a Board of Inquiry into the Victorian Timber Industry.

Central to the strategy is the need to make best use of timber in a way that will strengthen the

Table 2: Alternative employment development scenarios for East Gippsland at 2001 (FTAE jobs)¹

	<i>Timber</i>	<i>Tourism</i>	<i>Total</i>
1985 employment	580	120-130	700-710
Reduction to sustainable yield and LCC park proposals:			
(1) No integrated harvesting	100-115 ²	250+	350-365
(2) Conservative integrated harvesting ³	135-150	250+	385-400
(3) Full integrated harvesting	460-510	250+	710-760

Footnotes:

1. FTAE is full-time annual equivalent.

2. The range covers the 3% and 2% productivity growth figures respectively.

3. Conservative integrated harvesting refers to harvesting of both sawlogs and pulpwood only from forests deemed able to supply more than 40 m³ per ha.

Source:

NIEIR projections

dependent industries, and protect the environment.

A number of initiatives in the strategy have particular relevance to the East Gippsland area, and to the communities dependent on the timber industry. Of greatest importance is the decision to reduce the present level of cutting in East Gippsland and move to regional sustainable yield within a 10-year period. The first stage of this reduction was introduced with the 1986-87 logging season.

Other major policies include: protection of all rainforest on public land; development of a legislated Code of Forest Practice; public participation in the preparation of Forest Management Plans; and the introduction of trials of alternatives to clearfelling in East Gippsland and elsewhere.

There is a commitment in the Strategy to a sawlog-driven forest industry, with an emphasis on manufacturing value-added products, and to the maximum productive use of wood residues. Royalties will be set with the aim of achieving at least a 4% return to government on funds invested. The government is establishing accounting systems to monitor this aim.

The government has recognized that reductions from the present level of cutting in East Gippsland will affect industry employment. To this end it has established the East Gippsland Employment Development Committee to develop employment strategies and has directed that a tourism strategy for the area be prepared jointly by the Victorian Tourism Commission and the Department of Conservation, Forests and Lands.

At present the sawmilling industry in East Gippsland predominantly produces green sawn structural timbers, principally for home construction. The Strategy gives priority to value-adding industry development, and a Value-Added Processing Task Force will be established to assist the timber industry to make the necessary adjustments in processing and marketing.

In order to develop the processing of log material to its full commercial potential, the government will allocate sawlogs by quality and species to companies with the appropriate processing facilities. In East Gippsland at

present, this principle relates to mountain and alpine ash and shining gum. A 5- and 15-year licensing system will be established that will identify levels of supply from State forest over the licensed period.

The government has stated its commitment to a sawlog-driven industry and, to this end, proposes to introduce a Value Adding Utilization System (VAUS) in East Gippsland. The purpose of this system is to permit the production of a range of products from the forests, while ensuring that sawlog production remains the principal driving force for operations.

Maximum opportunity will be provided for all hardwood logs to be processed as sawlogs, and for the utilization of material to its best economic advantage. Material not capable of being sold as sawlog or for other higher-value uses is described as residual roundwood. Production and sale of this material will be supervised and controlled by the Department of Conservation, Forests and Lands.

Introduction of the Value Adding Utilisation System will be subject to an Environmental Effects Statement (EES), and if approved it will undergo a 3 year trial period in Central Gippsland and East Gippsland. The removal of residual roundwood from Central Gippsland and East Gippsland Hardwood Sawlog Management Areas over the period of the trial is not to exceed 300 000 m³ per annum.

An interim public report will be provided at the end of 1988. If it is demonstrated that the trial is meeting the essential environmental, social, and economic criteria, expressions of interest will be called for the processing of residual roundwood up to regional sustainable yield levels. These proposals will be subject to an EES. No new proposals will be implemented unless an EES is favourable and until after the 3-year trial period is complete. Preference will continue to be given to proposals for local processing of residual roundwood.

There are already extensive areas of regrowth forest in East Gippsland. The strategy proposes that operational thinning trials of mixed-species stands in East Gippsland be established. These operations will have the dual effect of improving sawlog production from retained trees, and utilising thinnings for various products.

The East Gippsland timber industry

Nature of the industry

Some 23 sawmills in or adjacent to East Gippsland draw supplies of hardwood timber from public land within the study area. These employ a total of about 600 people, including those involved in bush work, truck-driving, and further processing. Current sawlog allocations to various mills range from about 2000 m³ per annum to just over 40 000 m³ per annum. A number of mills are located at major centres such as Orbost and Cann River, while others form the basis of smaller settlements such as Club Terrace and Bendoc.

Four major forest types in the study area provide timber for the sawmilling industry:

- ash-type forests containing alpine ash, mountain ash, and shining gum
- mountain mixed-species forests dominated by brown barrel (known locally as cut-tail), messmate, and mountain grey gum
- foothill mixed-species and coastal mixed-species forests, both dominated by silvertop, several stringybark species, narrow-leaf peppermint, and mountain grey gum.

Depending upon the quality and species involved, timber from the area is suited to a variety of uses including house-framing, furniture manufacture, joinery, heavy construction, and urban fencing. Most of the output is sold on the Melbourne market.

The study area also produces railway sleepers, poles, fencing timbers, small quantities of flitches from selected sawlogs for sliced veneers, and wood chips from sawmill residues and forest clearing on private land.

Significance of the industry

The forests of the East Gippsland area currently provide about 30% of the total supply of hardwood sawlogs from public land in Victoria. Stage One of the employment and economic study that NIEIR conducted for the Council showed that gross turnover in the timber industry amounted to more than \$38 million in 1983-84 while the flow-on effect to other sectors in the regional economy was more than

\$18 million. Royalties paid to the government exceeded \$4 million.

The study estimated that the timber industry, directly and indirectly, accounts for some 42% of the total employment in East Gippsland. The local regional centre, Orbost, depends not only on economic activity in its immediate vicinity but also on activity throughout East Gippsland. Other smaller settlements such as Cann River, Club Terrace, and Bendoc are essentially timber towns and their future depends on the continued location of sawmills at these centres. Many business establishments, particularly in towns such as Orbost and Cann River, depend to a large extent on income derived from the timber industry and related activities.

Views differ about the future competitiveness of the East Gippsland industry. On the one hand it is said that increasing supplies of softwood from New Zealand and Chile will affect demand for wood from Victorian forests, in particular the green hardwood framing market that uses most of the East Gippsland output. On the other hand it is suggested that green scantling will retain a significant proportion of the market because of its intrinsic properties such as higher strength and lower cost relative to the major competitors (radiata pine, seasoned hardwood, and imported timbers). The ability to cut house lots with the full range of sizes and grades for delivery direct to building sites is seen by the industry as a competitive advantage that will persist.

The timber resource

During this investigation, Council has been assisted by data on the type, location, and quantity of commercial timber resources throughout East Gippsland. The principal source of this information—a detailed statement of timber resources prepared by the Department of Conservation, Forests and Lands—has been supplemented by further useful material provided in submissions. While the information is the best currently available, it is nevertheless compiled from base data that vary in precision, and these are being regularly refined and updated.

The inventory identifies the gross area available for timber production and then the area that will actually be harvested following the

exclusion of land that is unsuitable because of steep slopes, stream-side buffers, etc., and tracts with particular conservation values. The remaining land on which timber harvesting could be conducted is referred to as the "net productive area" and this concept is used extensively in the following discussions.

The resources inventory distinguishes between two types of timber resource; the one that is currently economic to utilize using a sawlog-only operation, and the one that is classed as uneconomic to utilize and regenerate using a sawlog-only operation. An arbitrary distinction is made between these two resource types and any area that carries a sawlog volume generally less than 40 m³ per ha is described as being uneconomic to harvest and/or regenerate on a sawlog-only basis—because its sawlog resource is scattered and would therefore be too expensive to harvest, or because the cost of its adequate regeneration exceeds the funds and resources available to the Department of Conservation, Forests and Lands. The high cost of regeneration is associated with the need to pay the logging contractor to fall non-sawlog trees in order to allow adequate regeneration to become established and mature.

In his "Report of the Board of Inquiry into the Timber Industry", Professor Ferguson indicated that reductions in current East Gippsland utilization standards, arising as a result of diminishing supplies of mature timber, will lead to a large proportion of the lower-grade and lower-stocked areas being harvested for sawlogs in the future. In fact, forests of the same type immediately west of the Snowy River have been and are being utilized for sawlogs at

the present time, as are limited parts of the East Gippsland area. Thus the classification of the timber resource as economic or uneconomic is somewhat artificial, as the categorization will vary as operational economies and resource supply changes. The Government's Timber Industry Strategy document makes no distinction between these forest types and the Council has adopted that view in these recommendations, although it is recognized that the timber resource is highly variable in nature.

The Strategy identifies productive forest on the basis of mature tree height, and those forests with a current or potential top height of greater than 28 m are classed as productive forest. In East Gippsland this broadly coincides with open forest III and IV as shown on the forest types map published in the descriptive report. Resource data in the Department of Conservation, Forests and Lands Forest Resource Inventory Statement correspond with this broad classification. As indicated above, net productive area is calculated after excluding unsuitable areas, and areas in accordance with prescriptions.

Area for timber production

The total net area of productive forest in East Gippsland is about 450 000 ha. With the approval of the 1977 recommendations, the net area of productive forest available for utilization was reduced by 70 000 ha. The remaining 380 000 ha were located in the 635 000 ha of public land designated for hardwood timber production and as uncommitted land, including special uncommitted land, in the 1977

Table 3: Current wood production area as at 30 June 1986 (ha)

Current area of public land in East Gippsland		812 000
Less		
Area excluded because of unsuitability and prescriptions	362 000	
Net area capable of supplying sawlogs		450 000
Less		
Net area located in existing parks and reserves	70 000	
		380 000
Less		
Area of regrowth forest*	97 000	
Net area available for sawlog operations (includes special uncommitted land)		283 000

* Includes some 8 900 ha of forests logged and in process of regeneration since 30 June 1984.

Source:

Department of Conservation, Forests and Lands, Forest Resources Inventory Statement as at 30 June 1984—adjusted for logging to 30 June 1986.

recommendations (see Table 3). Of this, 97 000 ha carry regrowth; consequently, the area of mature forest from which sawlogs may be extracted is 283 000 ha as at 30 June 1986.

Timber volumes

Table 4 shows the estimates of the commercial timber resource within existing parks and within the currently available net area of productive forest. Adjustment has been made of data provided in the Department of Conservation, Forests and Lands Forests Resources Inventory Statement as at 30 June 1984, to allow for logging that has occurred in the 2 years to 30 June 1986.

After taking account of the sawlogs in the existing park and special uncommitted areas, the sawlog resource associated with the existing net productive area of State forest is a little more than 9 400 000 m³ with a pulpwood resource of more than 33 000 000 m³.

Resource implications of recommendations

Resource withdrawals

The Council is proposing substantial extensions to the existing Snowy River and Coopracambra Parks, some smaller additions to the Croajingolong and Tingaringy National Parks, the establishment of a new national park centred on the Errinundra Plateau, and a coastal park between Marlo and Sydenham Inlet.

These and other small additions to the conservation reserve system contain timber resources as summarized in Table 5.

Additional resources made available

The recommendations also make available some sawlog resources that were previously unavailable. These include some 21 000 m³ in

Table 4: Estimate of commercial timber resource with current land use (m³)

	<i>Sawlogs</i>	<i>Net volume</i>	<i>Pulpwood</i>	<i>Net Volume</i>
On all public land in East Gippsland		11 700 000		40 570 000
In existing conservation reserves including all national and State parks*	1 935 000		6 430 000	
Sawlogs within special uncommitted areas (unavailable pending review by Council)	360 000		1 060 000	
Sawlogs available for harvesting with existing resource base and with integrated harvesting		9 405 000		33 080 000

*These recommendations were approved by the Government in 1978.

Source:

Department of Conservation, Forests and Lands, Forest Resources Inventory Statement as at 30 June 1984—adjusted for logging to 30 June 1986.

Table 5: Timber resources available after park proposals

	<i>Sawlogs</i> <i>Volume</i> <i>(m³)</i>	<i>Pulpwood</i> <i>volume</i> <i>(m³)</i>
Timber available with existing land use	9 405 000	33 080 000
Timber within special uncommitted areas (availability subject to review by Council)	360 000	1 060 000
Sub total	9 765 000	34 140 000
Timber resources in proposed parks and reserves—		
–Rodger River-Bowen Range	1 275 000	2 700 000
–Errinundra	715 000	1 245 000
–Coopracambra-Kaye	325 000	1 220 000
–Other reserves	105 000	400 000
Sub total	2 420 000	5 565 000
Additional resources made available (Mount Ellery and Kanuka Creek)	17 000	25 000
Resource available in State forest	7 362 000	28 600 000

Source:

Department of Conservation, Forests and Lands, Forest Resources Inventory Statement as at 30 June 1984—adjusted for logging to 30 June 1986.

part of the Goolengook River area, placed by the Council in previous recommendations in a 'special uncommitted' category.

The Council is also recommending that the Kanuka Creek Flora Reserve become State forest as it considers the values in this reserve are now better represented and protected in the Errinundra National Park, and the stand has been extensively damaged by insect and other infestations. The reserve contains some 16 000 m³ of shining gum. An additional 1 000 m³ of resource becomes available, as part of the previously recommended Ellery Scenic Reserve is now proposed for inclusion in State forest.

All these resources are accounted for in Table 5.

Regrowth

The park extensions recommended by the Council withdraw approximately 5 000 ha or 5% of the net productive area of currently available regrowth, making a total of 6% withdrawn after taking into account Council's previous recommendations in 1977. The impact on regrowth resources is therefore not great. As some of the regrowth is very young, it is not possible to provide accurate estimates of the actual volume of timber that could be harvested from these areas. Impacts on regrowth are therefore expressed as percentages of the available net productive area.

Sustainable yield

If it is assumed that sustainable yield in the region will drop immediately and that regrowth resources will not become available until the

year 2030 (that is, in 43 years time), the annual sawlog-harvesting rate could be maintained at 171 000 m³. This compares with an annual rate of 227 000 m³ or some 71% of the present cut if no additional parks or reserves were created (see diagram over leaf).

Table 6 indicates that the recommendations would have the greatest impact on the future availability of ash, shining gum, and mountain mixed species, with the greatest proportionate effect on the ash and shining gum. However, these latter species represent a relatively small, although important, percentage of the currently available timber resource. The implications of the characteristics of the timber resource available under these proposals is discussed later in this chapter.

It is recognized that the inclusion of the sawlog resource that results from integrated harvesting and the exclusion of a considerable portion of ash and shining gum in proposed parks will affect the log mix available. This will need to be taken into account when determining the nature of the resource to be made available to particular mills in the future. The reduction in available resources and the altered log mix will undoubtedly result in changes to the structure of the industry in East Gippsland.

Timber production from State forest

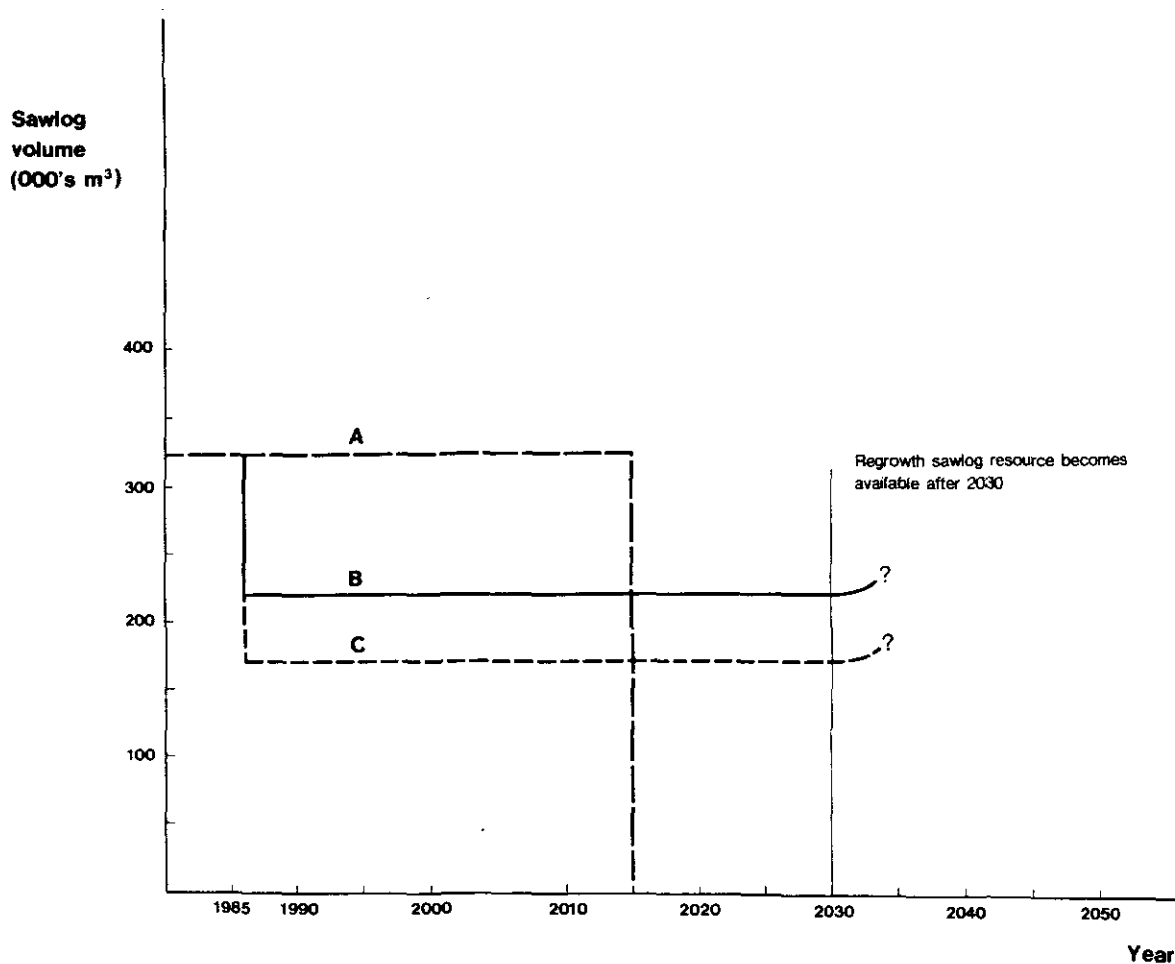
Policies over past decades have primarily aimed at achieving self-sufficiency in wood products and a sustainable yield on a State-wide basis. The combined effects of the 1939 wildfires, which killed large areas of prime hardwood

Table 6: Impact of park proposals by species class at 30 June 1986

	Sawlog volume by species (000s m ³) ¹					Total
	Ash species	Shining gum	Mountain	Mixed species Foothill	Coastal	
Currently available	484	321	4090	3010	1860	9765 ²
Available under these recommendations	26	143	2772	2638	1783	7362 ³

Footnotes:
1. Figures are rounded and adjusted for logging to 30 June 1986.
2. Includes resources within special uncommitted areas, see Table 5.
3. Comprises resources located in areas recommended to be available for timber production, including part of the Goolengook special uncommitted area, that part of Ellery Scenic Reserve recommended to become State forest, and in Kanuka Creek.
Source:
Department of Conservation, Forests and Lands Forest Resources Inventory Statement as at 30 June 1984—adjusted for logging to 30 June 1986.

Estimated Sawlog Availability - East Gippsland Study Area (Assumes full integrated harvesting and immediate reduction to regional sustainable yield)



- A** ————— Maintain current level of harvesting; resource exhausted by 2015
- B** ————— Immediate reduction to sustainable yield (227 000m³ / annum)
- C** - - - - - Further reduction of sustainable yield due to withdrawal of resources in new parks and reserves and other factors (171 000m³ / annum)

timber, and post-war housing boom that created a large demand for timber resulted in the need to harvest areas of State forest at levels unable to be sustained over a complete rotation. This has been the case in East Gippsland.

If current levels of cut continued, the timber industry in East Gippsland would exhaust the mature timber resource by the year 2015 and leave a 15-year gap until regrowth resources could be harvested. This of course would have severe ramifications for the East Gippsland people and the regional economy. The Timber Industry Strategy establishes the government's commitment to reduce harvesting to sustainable levels. While in the short term this is likely to have social and economic effects, it will ensure the availability of a wood resource until the regrowth forests are able to be harvested.

The Council has identified a gross area of 542 000 ha which is recommended as State forest. As shown in Table 3, prior to these recommendations, the net productive area available for timber production was 380 000 ha, comprised of 97 000 ha of regrowth forest and 283 000 ha of mature forest.

These recommendations withdraw some 42 000 ha of net productive area (including 5 000 ha of regrowth forest), leaving some 338 000 ha available for timber production, of which 246 000 ha carries mature forest.

The mature sawlog resource available from this area is 7 360 000 m³, some 3 600 000 m³ of which is located in areas that have been cut over in the past or have been subjected to extensive wildfires with consequent effects on sawlog productivity and quality. With the reduction in cut to one that is sustainable and the reduction in resource arising from park proposals, the significance of the sawlog resource in these forests increases.

Based on the areas of public land designated for hardwood timber production and as uncommitted land in the 1977 recommendations (see table 5), integrated harvesting could yield around 34 000 000 m³ of pulpwood—that is, some 790 000 m³ per annum over the next 43 years. Taking into account the recommendations for new parks and reserves, the sustainable level of harvest would be about 665 000 m³ per annum until the year 2030.

However, after about 2030 the level of sawlog production would begin to increase as regrowth forests become available for harvesting, but the pulpwood resource would rapidly decline to a level similar to that for sawlogs.

The sustainable level of pulpwood production would also be influenced by silvicultural practises such as thinning and the success of protecting regrowth forests from damage by fire.

Harvesting and regeneration operations

These proposals identify a net area of 246 000 ha of mature forest from which timber products can be supplied in association with and as a consequence of sawlog harvesting. Timber operations would be conducted in accordance with:

- the outcome of legislation and environment assessment processes
- the application of a code of forest practice and the environmental constraints
- the establishment of monitoring procedures
- the results of ongoing and new research

These various aspects are discussed further in later sections.

If sawlogs are to be harvested it is important that appropriate regeneration programs be implemented. Current methods involve the removal of most non-sawlog trees to ensure that subsequent regrowth is not suppressed.

The cost of falling these non-sawlog trees (or culls) is extremely high, particularly in previously cut-over or fire-damaged forests where only a small proportion of the stems will provide sawlog material. These costs must be borne either by the sawmiller or the Department of Conservation, Forests and Lands. However, if pulpwood is taken in conjunction with sawlogs, the cost of regeneration can be financed through the increased total royalties paid.

Currently the cost to the Department of silviculturally treating these forests means that their potential to produce substantial volumes of high-quality sawlogs cannot be achieved and the options associated with the utilization of future high-quality hardwood forests cannot be created.

Integrated harvesting would allow a more efficient use of wood residues, which are presently left on the ground and burnt, and could also provide additional income and employment in the region. The State could earn about \$1 million in revenue from royalties for every 100 000 m³ of pulpwood harvested.

The Timber Industry Strategy indicates the government will be investigating alternative harvesting systems in areas where clear falling is now practiced. It would be appropriate for the harvesting and regeneration techniques in the low-elevation mixed-species forests to be investigated also, with a view to determining whether satisfactory regeneration and growth can be obtained using more environmentally sensitive systems. In particular, emphasis should be placed on re-establishing the durable species that have been selectively harvested in the past so that the composition of future forests resembles more closely the one existing earlier this century. The Department of Conservation, Forests and Lands has recently initiated a research project to identify the most effective method of re-establishing durable species in these forests.

Estimated impact of recommendations on employment

As indicated in its report to the Council, the NIEIR emphasized that it is difficult to make precise predictions about future employment levels because so many factors impinge on those levels. However, the Institute did establish certain relationships between employment numbers in the timber industry and timber volumes, which provide a general indication of the change in employment resulting from a shift in the availability of timber resources.

In addition, the Institute made some estimates about future employment in other sectors of the economy and was also able to establish multipliers to derive indirect employment impacts in the region. The overall employment implications of the Council's proposed recommendations are summarised in Table 2 and described in more detail in Appendix 2.

Although the Council's final recommendations differ somewhat from its proposed ones, in that the available mature timber resource is increased slightly, the employment implications

will be of the same magnitude. However, the effect of 2 years' harvesting on the mature resource would have to be taken into account when determining regional employment impacts. The Institute concluded that for the timber and tourism sectors, when multiplier effects are included, the potential regional employment opportunities by the year 2001 would be reduced by about 130, taking into account the Council's recommendations, the need to limit harvesting to a sustainable level, integrated harvesting, and a 2% productivity increase. This estimate includes both direct and indirect employment.

Integrated harvesting

As outlined earlier in this chapter, the Council believes that—subject to the procedures specified in the Timber Industry Strategy and the additional safeguards recommended below—the full range of timber products could be harvested from the available area in State forest.

The Council is aware that proposals to introduce integrated harvesting in East Gippsland raise some significant and valid environmental concerns. Trees now left because they are uneconomic or unsuitable for harvesting for sawlogs would be felled and under the new systems that would operate, would be sold as sawlog or for pulp. As larger quantities of timber would be harvested, greater nutrient loss, increased soil disturbance on harvested areas, increased compaction of log landings, and increased road use would occur.

There is some evidence that coupe disturbance is about 20% higher in an integrated operation than in a sawlog-only operation. This would lead to an increase in various forms of soil deterioration, particularly on granitic parent materials. Roading can be a major contributor to increased sediment loads in streams, and can have a detrimental effect on water quality, flow regime, and stream biota. However, these problems can be minimized by careful attention to siting, construction and maintenance standards.

In addition, it is claimed that integrated harvesting contributes to changes in species composition of vegetation communities, alteration of gene pools of both flora and fauna, and changes in population sizes due to

variations in the quality and quantity of available habitat.

It is important to recognize that many of these concerns apply to both sawlog-only operations and integrated harvesting, with the main difference being the increased intensity of utilization of a given area during integrated operations.

Professor Ferguson's Timber Industry Inquiry Report indicated that environmental impact would increase if integrated harvesting was introduced, but it concluded that under current harvesting techniques the increase would be minimal. The Council notes this view, but believes that the monitoring and research program associated with pulpwood trials in East Gippsland should be supplemented by further detailed research to establish the extent of these additional effects. Such research is necessarily long-term, but its commencement should be given a high priority.

Expansion of pulpwood operations

Fears expressed about the establishment of a pulpwood industry include concern that sawlogs would be utilized for pulp—and that environmental considerations would be compromised.

The Timber Industry Strategy outlines various processes and environmental constraints aimed at ensuring that neither of these occurs. The strongest safeguard, however, lies in the establishment of a monitoring committee, as outlined in the Timber Industry Strategy. To be effective, this committee should be properly resourced and be constituted in such a way that the community can see it as an independent body. The committee should oversee all aspects of the utilization of wood products from State forest.

The Strategy has indicated that timber production would be confined to forest with the potential to have a stand top height of 28 metres or more. The Council believes that the areas so defined should be incorporated in legislation as an added safeguard, together with the regional sustainable levels of cut of both sawlogs and pulpwood, as indicated in the Timber Industry Strategy.

Within the legislatively defined areas, integrated harvesting would proceed in accordance with a set of principles to control

the operations and these would form the basis of the proposed 'Code of Forest Practice' recommended by Professor Ferguson, and subsequently discussed in the Timber Industry Strategy.

The introduction of the Value-Adding Utilisation System, VAUS, will require a greater degree of supervision of forest operations to ensure: that the timber resource is utilized efficiently; that waste material is kept to a minimum; and that environmental standards are adhered to. The Department of Conservation, Forests and Lands will require additional resources if adequate supervision is to be provided.

Pulp mill proposals

In the past, there have been proposals to establish a pulp mill in the study area, but no such development is currently proposed. Any such proposal would need to be considered in the light of the environmental effects and the commitment to the long-term supply of pulpwood. The NIEIR study indicated that the economics of establishing a pulp mill in East Gippsland made such a proposition most unlikely before the year 2000, even if environmental problems could be overcome.

Unsuitable area

The Timber Industry Strategy identifies the need for a forest coupe plan to recognize the land capability of individual catchments. While agreeing with this, the Council believes that the 'Code of Forest Practice' being developed by the Department of Conservation, Forests and Lands should include a requirement that land capability studies be conducted on all land available for timber production, and that the findings of such studies be incorporated into coupe plans.

The Council recognizes that coupe plans prepared by the Department of Conservation, Forests and Lands are most important and these should, in addition to other relevant information, specify the estimated yield of sawlogs and pulpwood as well as particular management controls required to meet any identified erosion hazards.

The land capability studies should identify erosion hazard ratings for the new areas of land available for timber harvesting.

In some instances it could be expected that some land, currently identified as part of the net productive area in East Gippsland, could be categorized in a 'high-hazard' class, and therefore require levels of technology and management that may be too costly to implement. Such a site should not then be available for harvesting. On other sites, the volume of timber or the area to be harvested may need to be reduced in order to meet erosion hazard limitations. The particular set of criteria used should reflect the capability of the land units to support the various activities involved in timber harvesting, without excessive erosion. Those activities that disturb or expose the soil surface or that channel run-off, are of most significance.

The Council considers that any future plans for the utilization of pulpwood should be confined to the areas identified as being suitable and be tied strictly to the procurement of sawlogs, unless the material is obtained as a result of silvicultural thinning programs aimed at providing a greater volume of sawlogs at the final stage of felling. Rotation lengths in East Gippsland forests should continue to be geared to the production of high-quality sawlogs with the production of pulpwood as a by-product.

The Timber Industry Strategy noted that opportunities exist to significantly increase the productivity and log quality of certain forests through the application of thinning regimes. The Department, in collaboration with the CSIRO Divisions of Forest Research and Chemical and Wood Technology, will conduct operational trials in mixed-species regrowth stands to investigate the potential of thinning to improve sawlog production and also to identify ways in which the thinnings can be utilised for various products. Depending upon the outcome of those trials, thinning of regrowth forests could commence in East Gippsland.

It should be noted that, while substantial volumes of pulpwood could be available over the next 30 years or so, the volume will decline markedly as regrowth resources begin to be utilized. These likely wood flows (including those that may be available from thinning operations in regrowth stands) need to be clearly understood and must be taken into account when consideration is given to the way a pulpwood resource may be utilized.

Other factors affecting resources availability

The Council is aware that various other factors over and above these recommendations could in the future affect the level of the available timber resource.

Reductions in the remaining mature resource could result from future flora and fauna surveys conducted by the Department of Conservation, Forests and Lands, should these reveal significant floral and faunal values that are not already adequately represented in reserves. Some six forest blocks in the timber resources inventory (in the remaining State forest area) are scheduled to be surveyed in the future. These are Buldah, Buckland, Noorinbee, Tennyson, Lock Up, and parts of Misery. Seven other blocks in State forest have been surveyed, but resource estimates in the Hardwood Area Resource Inventory Statement have yet to be adjusted.

The survey of the Rodger Block resulted in the loss of 23% of the net productive area available, but this block's significance and the fact that some of the others to be surveyed have been partially logged make it unlikely that the latter will lose as much as 23% of their productive area. Taking an average figure of 14% — derived from the results of three blocks recently surveyed in East Gippsland (Ellery 12%, Coast Range 24%, and Yalmy 12%) some 360 000 m³ of sawlogs could be withdrawn from harvesting within these 13 forest blocks.

The Council points out, however, the importance of assessing the findings of individual flora and fauna surveys in terms of the values contained in the existing reserve system or in other forest management blocks. For this to be done, surveys would need to include existing reserves so that the delineation of further exclusions from harvesting takes into consideration the values identified in those reserves and other forest blocks in the region.

In line with government policy, rainforests and their buffers are recommended to be protected. While the Department of Conservation, Forests and Lands has made some estimates of the potential loss of mature resource in such areas, these are only indicative as no detailed mapping of rainforest has been undertaken. In addition, other resources that may fall within the rainforest buffer, but may be excluded for other

reasons have not been considered in the estimates. The resource that may fall within buffers has yet to be carefully estimated.

Fire is a constant threat in East Gippsland and it is inevitable that some timber resources will be lost in the future. Again the loss is difficult to quantify, as the frequency and intensity of fires affect the level of recovery that can be achieved through salvage logging. However, the Department of Conservation, Forests and Lands resource inventory indicates that virtually all the sawlogs in areas subject to recent fires will be salvaged, although the quality of the logs and regrowth stands will be affected.

As well as the reductions in the resource estimates described above, other changes could result in increases. Information that some sawmillers provided to the Timber Industry Inquiry indicated that between 5 and 20% more millable timber could be recovered from current logging areas if there was a reduction in utilization standards for sawlogs.

Some mills already take a proportion of this material, but an adjustment of the current royalty rate and other administrative arrangements should allow increased utilization of this resource. Professor Ferguson concluded that:

“The present pricing system is characterized by a marked differential between the prices paid for hardwood pulpwood and those paid for hardwood sawlogs. The effect of the system is that there is little incentive for a sawmiller to consider taking smaller size or poorer quality logs.

Consideration must be given to developing a more continuous price gradient, such as is used at Eden in New South Wales, that will encourage sawmillers to utilize such logs.”

A new royalty rate structure outlined in the Timber Industry Strategy is now in force in Victoria and should provide a further incentive for these logs to be taken in the future.

The development of new administrative arrangements associated with integrated harvesting could also encourage greater utilization of lower-quality logs. Adopting a very conservative figure, the mature sawlog resource could be increased by about 5%.

Total impact

All these changes in the resource base, including the Council’s recommendations for new parks and reserves, would have the net effect of reducing total sawlog resource from 10 270 000 m³ to 7 350 000 m³ (see Table 7).

Further processing

The Timber Industry Strategy referred to a number of trends in the industry, including: the reduced availability of hardwood sawlogs in Victoria; increasing competition from softwoods in many traditional hardwood markets, including housing; significant changes in the mix of species and quality of logs available, as an increasing proportion of hardwood sawlog is supplied from regrowth stands; and the development of new products and markets through technological advances in processing equipment and potential uses of

Table 7: Estimate of available sawlog resources (m³) at 30 June 1986¹

	Total net volume	
Current sawlog resource (including resources in special uncommitted areas and additional sawlogs made available)		10 270 000
Sawlogs withdrawn as a result of parks and other reserve proposals	2 540 000	
Sub total		7 730 000
Possible reductions in sawlog resources due to flora and fauna surveys	380 000	
Available resource taking into account the Council’s recommendations and other factors affecting resource availability ²		7 350 000

Footnotes:
 1. All figures in this Table include a very conservative 5% increase in volume to account for greater utilization of low-quality sawlogs.
 2. No allowance has been made for resources in rainforest buffer areas, as these have yet to be determined with accuracy.

Source:
 Department of Conservation, Forests and Lands Forest Resources Inventory Statement as at 30 June 1984—adjusted for logging to 30 June 1986.

shorter lengths through adhesive practices. The survival of many firms will depend on their response to these trends towards further processing, although this is not to say that there will be no market for unseasoned timber.

The Council endorses the support in the Strategy for the development of new processes and products for hardwoods. The indications are that more effective production, processing, marketing, and promotion—backed up by appropriate research, training, and quality control—could increase timber sales.

Council also believes that the phasing down of the sawmilling industry will allow time for other employment alternatives, including further processing, to be evaluated and, if suitable, implemented.

It is important to stress that even without the proposed park additions the sustainable volume of ash and shining gum over the next 43 years is about 19 000 m³ per annum, with ash comprising about 11 000 m³ per annum (see Table 6). As noted by NIEIR, the industry maintains that, to warrant substantial investment in pre-drying, kiln, and reconditioning facilities, a minimum throughput of about 20–30 000 m³ per annum is essential. Thus, given that the sustainable volume is below the minimum level and that the East Gippsland ash and shining gum resource is known to contain a higher degree of defect than similar species elsewhere, the economic viability of establishing further processing facilities in East Gippsland would appear to be, at best, marginal.

However, as is currently the case, material that is suitable for drying could be sent to processing facilities in Melbourne or elsewhere outside the study area, and it is possible that, as a result of the government's policy of encouraging further processing beyond the green stage, additional volumes will come from East Gippsland.

The potential for further processing in the region therefore depends upon the success of new and economically viable sawing and processing techniques for the mixed species, as this is the only means by which increased volumes of suitable timber can become available. The park proposals reduce the sustainable volume of ash and shining gum to around 4 000 m³ per annum but, as shown in

Table 6, a large volume of mountain and foothill mixed species is still available within State Forest. It is important to note that silvertop when free of defect is well suited for drying and surveys should be undertaken to identify high-quality mature stands of this species, for use in further processing.

To assist the industry to make the necessary adjustments in processing and marketing, the government will establish a 'Value-Added Processing Task Force', which will investigate and develop new strategies aimed at achieving the maximum potential from the timber harvested.

It is clear that the hardwood timber industry will continue to provide employment opportunities in East Gippsland if it can adjust to producing a wider range of products than at present, including the utilization of non-sawlog material. The Council therefore endorses the government's policy of encouraging and actively assisting millers to become involved in further processing and it also supports the allocation of sawlogs by quality and species to companies with the appropriate processing facilities.

One East Gippsland sawmiller has recently submitted a proposal to the government to obtain access to high-quality timber for further processing. If successful, the miller is prepared to install a veneer-slicer, drying kilns, and machining equipment at a cost of \$1.3 million.

The government also plans to foster the growth of high-technology industry in the State. Developments that are being looked at with respect to timber production include the use of micro-computers to improve decision-making in the sawing of timber and the feasibility of producing charcoal for industrial purposes from residues.

Large-dimension timbers

Concern was raised that the Council's recommendations would have a major impact on the industry's ability to produce the full range of timber sizes used in house construction, particularly the long-length, large-dimension pieces. It was considered that the ash and shining gum component of the log mix was critical to ensuring adequate supply of large-dimension timbers, and a large proportion

of this resource has been withdrawn by the park proposals.

At the request and with the co-operation of sawmillers in East Gippsland, the Council collected and evaluated the available information on the sawn output of long-length large-dimension timbers by species from the East Gippsland area over the past 5 years. The major limiting factor in the data provided was that no precise records are kept of the uses to which a log of a particular species is put. For example, a number of sawmillers with access to ash, shining gum, and mountain mixed species were unable to provide data that identified the relative importance of specific species groups with respect to the production of large-dimension timbers. One milling group, however, provided more detailed information, based on logs made available to that company over the last 5 years. This indicated large diameter ash and shining gum logs were important for the production of large-dimension timbers. It was also indicated that similar-size mountain mixed species logs could provide a significant contribution to this type of output, when relatively free of defect.

Information from sawmillers who did not have access to ash, shining gum, or mountain mixed species indicated that they were able to produce large-dimension timbers, although it appeared from the information that is available that their output of such products in percentage terms was somewhat lower than those millers with access to the higher-quality mountain forests.

The available information therefore does not permit any firm conclusions on this issue, although the general indications are that:

- Sawmillers with no access to ash, shining gum, or mountain mixed species were able to produce some large-dimension timbers
- Sawmillers with access to ash, shining gum, and mountain mixed species were able to produce a higher percentage of large dimension timbers
- As a general rule, the ability to cut these timbers relates to log size and amount of defect present in each log, rather than species. That is, production is dependent on logs of sufficient quality being available
- The available data show that the amount of defect present in large diameter logs of ash

and shining gum was less than for mountain mixed species logs of the same size.

- Even so, it would appear that the mountain mixed species resource is capable of producing significant volumes of large-dimension timbers.

It is important to note that, while the Council's recommendations remove a substantial proportion of the ash and shining gum, more than 2 750 000 m³ of mountain mixed species—that is, about 37% of the remaining sawlog resource in East Gippsland—is still available for timber production.

Other uses of State forest

At Waygara and Cann River

In its proposed recommendations, the Council identified some 7 000 ha in the vicinity of Waygara and Cann River that could be available for agriculture. Concern was expressed about the agricultural capability of these areas and whether there was any demand for alienation of public land.

Following further investigation, it was established that, with the appropriate inputs during and following the establishment of pasture, the land is capable of supporting grazing activities. The land can be safely cleared and pasture established without erosion and soil loss if procedures laid down by the Department of Conservation, Forests and Lands are adhered to.

It was also put to the Council that little demand existed for land to be made available for agriculture at this time and that little interest has been shown since the final recommendations in 1977 in acquiring land designated for agriculture at Waygara and Cann River.

However, as well as being capable of being developed and used for agriculture, these areas could be suitable for a number of other uses which may involve only parts of the areas.

Several suggestions put forward to the Timber Industry Inquiry and in the Timber Industry Strategy would require land if they are to proceed. Such suggestions include the establishment of a woodcraft centre and of a forest workers' training school, and land for the development of further processing facilities

such as drying mill, joinery plant, pole treatment plant, furniture manufacture, or, for example, the production of charcoal or further processing of agricultural products. The East Gippsland Coalition has suggested that a 'Model Sawmill' should be established in East Gippsland both as a tourist attraction and as a training school for sawmill workers. One or more of these facilities could be established on land of this nature and, in terms of area, the requirement would be small.

These areas also have potential for agroforestry projects of various kinds and other agricultural activities, although feasibility studies for the range of potential crops would be required.

In the future, there is likely to be an increasing demand for firewood. The area around Waygara would be particularly suited to the production of durable species for wood fuel, and the supply of fuel-wood using plantation forestry could be appropriate, too.

Alternatively the land may be used for exchange proposals for areas of cleared land surrounded by forest that pose management difficulties.

Moreover, there is a pressing need for research into the ecology of East Gippsland forests, their management, and silvicultural treatment. The areas described may well be suitable for the establishment of a research station and the setting up of long-term experiments on lowland forest types. Some experimental plots already exist in or adjacent to the Waygara land.

The Council has concluded that there may be different demands for land in the vicinity of Orbost and Cann River associated with various development proposals, including agriculture, in the future. However, before the land is used for any of the purposes referred to, an investigation of its conservation values should be undertaken.

The Council has therefore identified areas of State forest that could be first considered when proposals arise that require the clearing or modification of forested public land. In this context the Council notes recent data arising from salting studies in other parts of the State that indicate substantial clearing could result in salting problems on deeply weathered soils similar to some of the Waygara and Cann River land, although land north of the Princes Highway at Cann River may have different characteristics.

The applicability of the results to the Waygara and Cann River areas would need to be investigated if proposals involving permanent removal of trees over extensive areas are considered.

Around townships

Council believes that there is potential for further development of camping and other accommodation and recreation facilities in the region to enable more people to enjoy the diverse attractions that East Gippsland has to offer. In this regard, the Council supports the development of additional facilities at Cape Conran, provided they do not impair the significant environmental values of the area (see Recommendation A16).

Similarly the Council has separately identified areas of State forest in the vicinity of the coastal towns. These areas of public land have the potential to provide for a variety of uses, many of which would be associated with recreational activities.

It is clear that the type of proposals that could be considered differ markedly between the areas of State forest identified. Thus, proposals that might appropriately be located on land adjacent to Mallacoota could be quite inappropriate if sited adjacent to Tamboon Inlet. However, the available land at Tamboon may in the future prove to be the best site for some form of development associated with the use of the surrounding park.

While the range of uses suitable for the areas at Tamboon is constrained by certain environmental features, different considerations apply at Mallacoota and Sydenham. At these places the land could provide for a variety of recreational uses, some of which may not be appropriate in the surrounding national park. It may also provide in the future for some of the utilities and infrastructure associated with the towns' development and tourism as well as for more formal community recreational needs. While it is not intended to provide for large-scale subdivision into house lots, it may be appropriate for some areas to be developed in conjunction with specific proposals.

It must be emphasized, in identifying areas of State forest that can be developed to meet community requirements, that such de-

velopments can only proceed in accordance with all other planning requirements and where they fulfill the aims of regional and local planning strategies.

During the formulation of any plans for these areas, the visual attributes of the land and the impact that implementation of the plan may have on the particular town (especially Marlo and Mallocoota), and any conservation values it may have, should be taken into account.

Council supports the concept of leasing public land for major private developments in appropriate areas, both as an incentive for investment and as a mechanism for ensuring that any such development is compatible with sensible planning and the maintenance of environmental values.

For forestry education

As indicated in its Timber Industry Strategy, the government intends to increase community awareness about the need for environmentally sound forest management practices. It also recognizes the need to raise the level of public awareness and comprehension of forestry management issues. This is to be achieved through school education programs and first-hand experience in forest areas.

The Council believes that certain areas in East Gippsland are well suited to provide opportunities for community education in forest management and it has therefore identified two areas of State forest for forestry education. One is located on the Errinundra Plateau and the other is centered on the lower reaches of the Snowy River, just north of Orbost.

Errinundra

Council is aware that the Department of Conservation, Forests and Lands is proposing to establish interpretative facilities on the Errinundra Plateau. The Errinundra National Park will provide many opportunities to experience the outstanding values of this unique area and these facilities will be an important focus for visitors to the area.

The Council also believes that visitors would be interested in seeing, first-hand, timber-utilization operations—including activities associated with harvesting and regeneration—

and it is therefore proposed that the upper portion of the West Errinundra catchment be used for forestry education.

This part of the plateau contains significant floral, faunal, and landscape values and therefore provides an opportunity for the Department to demonstrate how the impact of timber harvesting on these values can be minimized by the application of stringent harvesting prescriptions. Such values include important stream environments and associated habitats, numerous waterfalls and cascades of outstanding visual quality, rainforest gullies, stands of 'mixed forest' containing both rainforest and wet sclerophyll forest elements, and mature wet sclerophyll forest.

The area contains stands of high-quality mature timber that would be available for harvesting, as well as extensive areas of regrowth forest of varying ages, and could offer potential for the establishment of research projects and monitoring programs associated with forest management operations in mountain forests.

Lower Snowy

The Department of Conservation, Forests and Lands is proposing to establish a major interpretation and information centre at Orbost. The centre will be a focal point for tourism associated with East Gippsland and will provide a range of information about public land in the region. The area identified for forestry education in the lower reaches of the Snowy is just a short drive from Orbost. Good access to the area already exists, in the form of the Orbost-Buchan Road on the western side of the river and the Yalmy Road on the eastern side.

It is also within an hour's drive of the main tourism centres identified in the government's "South Coast Region" Tourism Strategy—namely Bairnsdale and Lakes Entrance—and it could be expected that day visitors from this area would be attracted to the Orbost district.

The area identified has outstanding landscape values associated with the Snowy River valley as well as important floral values. In fact, several rare species reach the limits of their Victorian distribution there and the Snowy valley is an important landscape feature in biogeographic terms. The area also includes extensive stands of regrowth, and a range of forest types

common in the coastal and foothill sections of East Gippsland which are currently being utilized for timber production. It therefore offers a contrast to the Errinundra forests and consequently will enable the Department to display the differing management techniques applicable to these forests.

Brodrribb River (North Branch) and Coast Range (South)

In its proposed recommendations, the Council identified the Coast Range, extending from the proposed Errinundra National Park to the New South Wales border as a significant area. It was considered for inclusion in the Errinundra park. In the proposed recommendations, the Council indicated it was intending to assess in more detail, the faunal values of the area.

The Council found that although there are indications that the Coast Range, at least in part, is of particular floral and faunal significance, further field studies are necessary, both inside the proposed park and further north toward Musket Creek Reference Area.

In addition, the Council gave consideration to extending the Errinundra National Park to include the essentially untouched north Brodrribb catchment, which together with the south branch (already in the proposed national park), forms a large, undisturbed basin on the edge of the Errinundra Plateau. As with the Coast Range area, very little is known about the north Brodrribb catchment mainly because it is very steep and rugged and therefore largely inaccessible. It is considered that more information about this area is required before consideration is given to timber harvesting in this area.

The Council was also aware that both areas contain significant timber resources which are predominantly high quality shining gum and mountain mixed species. The Coast Range has about 147 000 m³ of mature timber while the north Brodrribb contains around 130 000 m³, giving a combined total of 277 000 m³. This figure represents some 10% of the ash/mountain mixed species resource available in the study area after taking account of these recommendations.

In the light of uncertainty about the nature conservation values of the 2 areas, and the long-term direction of hardwood sawmilling in East

Gippsland, the Council believes that timber harvesting and associated activities in both areas should be delayed for as long as possible.

Rainforests

The rainforests in East Gippsland are remnants of a much wider, ancient distribution of plant communities, now generally restricted to sheltered gully sites where fire frequency has been low and moist conditions have been maintained.

A committee established by the Minister for Conservation, Forests and Lands recently developed the following working definition of "rainforest" applicable on a State-wide basis:

"Rainforest is defined ecologically as closed (> 70% projective foliage cover) broad-leaved forest vegetation with a continuous rainforest tree canopy of variable height, and with a characteristic diversity of species and life forms. Rainforest includes closed transitional and seral communities, with emergent eucalypts, that are of similar botanical composition to mature rainforests in which eucalypts are absent.

Rainforest canopy species are defined as shade-tolerant tree species which are able to establish below an undisturbed canopy, or in small canopy gaps resulting from locally recurring minor disturbances, such as isolated windthrow or lightning strike, which are part of the rainforest ecosystem. Such species are not dependent on fire for their regeneration."

The committee also produced the following guidelines for the botanical identification of rainforest in accordance with the definition. The botanical characteristics of rainforest are:

- 1 A closed (> 70% projective foliage cover) canopy of broad-leaved shade-tolerant trees with or without sclerophyll emergents.
- 2 Canopy species consisting of one or more of the following: for warm temperate rainforest—lilly-pilly, kanooka, sweet pittosporum, mutton-wood and rarely yellow-wood, leatherwood and blue olive-berry; and for cool temperate

rainforest—myrtle beech, sassafras, black olive-berry and, in some circumstances, blackwood.

Canopy species for cool temperate rainforest on the Errinundra Plateau also include mountain plum pine, mountain pepper, Gippsland waratah, forest lomatia, privet mock-olive, banyalla, forest geebung and sub-alpine beard-heath.

- 3 Regeneration characteristically of rainforest rather than sclerophyll species.
- 4 Understorey species consisting generally of broad-leaved shrubs, herbs and ferns. Ferns, including tree-ferns, are usually abundant.
- 5 Epiphytic species, especially ferns (mainly filmy-ferns—*Hymenophyllaceae*), mosses, liverworts and lichens are usually abundant.
- 6 Characteristic vascular plant species (as listed in Appendix 1 of the committee's report).
- 7 Commonly with a projective crown cover of emergent eucalypts less than about 40%.

Delineation of the buffer around each of these rainforest areas should take into account the following factors:

- land use activities in adjacent areas—for example, clear-felling, selection logging, fuel-reduction or regeneration fires, aerial spraying of herbicides or fertilizers
- microclimatic effects of the exposure of rainforest margins resulting from clearing of adjacent areas
- the risk of trees falling into rainforest areas during timber-harvesting operations
- the likelihood of sediment eroded from roads being deposited in rainforest areas
- the risk of *Phytophthora cinnamomi* infestation
- invasion of weed species

The Department of Conservation, Forests and Lands has commenced a detailed floristic study of rainforest that will provide valuable information about the significance of particular stands and the distribution of rainforest species.

The Council will be conducting an investigation of rainforests in Victoria with a view to making recommendations on the range of uses for them and the way in which they should be protected through reservation. The rainforests in East Gippsland will be included in that investigation. Information collected by the Department of Conservation, Forests and Lands will provide a basic and important input.

Recommendation E15 covers the plant communities within the study area identified as cool temperate and warm temperate rainforest on the Floristic Vegetation Map of East Gippsland produced by the National Herbarium of Victoria, Department of Conservation, Forests and Lands (1984). A copy of this map was included with the recent resources report for East Gippsland.

About half of the closed forest communities of wet montane gullies and sheltered slopes of the Errinundra Plateau would be included in the proposed national park. (See Recommendation A8.) Warm temperate rainforests, however, are located in gully heads and along many of the lowland streams of the study area, although their occurrence is discontinuous. Some of them are included in a reference area, existing and proposed extensions to national parks, and flora reserves. Provision for the protection of other areas in State forest is outlined in Recommendation E15 below.

As fire, mechanical disturbance, and wind damage are the most common contemporary factors leading to rainforest degradation, each area to be protected will comprise, in addition to the stand of rainforest, a buffer of a width that will depend on various factors described earlier.

Land use goals

State forest throughout the East Gippsland area has a multiplicity of uses. It is important for the protection of water supply catchments, conservation of plants and animals, and timber production and provides many opportunities for outdoor recreation. The forests also provide honey, forage, road-making materials, minerals, and other forest products to satisfy various community needs.

Management of State forest should take into account these various values and should ensure that they can be maintained and that the range

of forest products can continue to be supplied in the future. As indicated in the Timber Industry Strategy, the "Code of Forest Practice" will:

- protect forests and their associated vegetation and fauna from damage by wildfire and from injury by biological or other agents
- conserve landscape values, wildlife habitats, and floral, historical, and other natural values
- provide a continuing supply of hardwood timber on a regional sustained-yield basis
- provide opportunities and facilities for public recreation and education
- protect water supply catchments and stream environments in general
- protect adjacent plantations from fire
- provide for apiculture, forest grazing, extraction of road-making materials, defence training, and mineral exploration and mining etc. where appropriate

In relation to these goals a number of principles are referred to below. These are based on harvesting prescriptions used by the Department of Conservation, Forests and Lands. In addition, certain values are listed and these should be protected by the implementation of management prescriptions.

Soil conservation and catchment protection

Adequate buffer strips—generally 40 metres wide on either side along major streams and 20 metres along ephemeral watercourses and hydrologically sensitive areas—should not be logged, and where possible other operations that cause soil disturbance should not take place in the buffer strips. They should, as far as practicable, be protected from fire. The width of the buffer should be determined after consideration of the sensitivity of the particular stream environment.

All roads and snig tracks, log landings, and dumps should be designed and constructed to minimize erosion. These should be adequately drained, breached, and barred when not required, and ripped to encourage rapid regeneration.

Intensive utilization operations should be excluded from areas of high erosion hazard and from slopes generally greater than 30°.

Except in some mixed-species forests at lower elevations, logging operations should be restricted during winter and during and following periods of heavy rainfall; consideration should be given to closing unsurfaced logging roads during these periods. Seasonal closure of other roads will continue to be necessary because of excessive damage, erosion, or cost of maintenance, or because of extreme fire hazard.

Under the new forest planning system outlined in the Timber Industry Strategy, forest roading and harvesting operations will be subject to plans prepared by the Department of Conservation, Forests and Lands and public comment invited prior to their implementation, to ensure the aims outlined in the above principles can be achieved.

Forestry operations in water supply catchments should be undertaken in accordance with a "Code of Forest Practice" and/or prescriptions agreed to by the Department of Water Resources or the delegated water authority.

Recreation and landscape

In planning for recreation and protection of landscape, special consideration should be given to road location, size and shape of logging coupes, and other activities carried out in the forest in areas of high landscape value.

Specific prescriptions should be applied to logging and other activities involving disturbance to the natural environment near major roads and walking tracks.

All refuse associated with logging, mining, or quarrying operations (such as tyres, drums, and disused huts) should be removed at the end of the operations.

Activities involving disturbance to the natural environment should not occur in buffer zones around popular recreation sites and beauty spots.

Nature conservation

Significant vegetation communities (such as healthlands and wetlands) and colonies of rare or endangered plants and animals should be protected, following consultation with specialist groups such as the National Herbarium. Some species or communities may require long-term monitoring in order to assess their habitat

requirements and the most appropriate methods of management to ensure their survival. The managing authority may, in some cases, need to:

- create and manage buffer zones of adequate size
- erect protective fencing
- provide additional weed and vermin control
- manipulate fire regimes to maintain or enhance the viability of certain species.
- collect and store seed for use in planting and re-establishment programs

It may be appropriate for the managing authority to involve local field naturalist groups or other interested parties in some of these management operations.

- Protection strips along streams and watercourses in logging coupes should be linked to other areas in which timber harvesting does not occur, in order to provide wildlife corridors.
- Sufficient mature and veteran trees in logging areas should be retained for fauna habitat
- All logged areas should, as far as possible, be regenerated with forest tree species native to the locality, and the species mix on the site should be retained.
- Aerially applied pesticides and fertilizers should be used with caution; no compounds that may significantly affect native animals should be used; any compounds should be carefully applied so as to avoid damage to retained native vegetation and aquatic environments.

Historic sites

Sites of historical significance or interest (such as relics of mining, logging, or early settlement) should be identified, and the sites and their environs should be protected, and the desirability or otherwise of upgrading vehicular access to each one should be considered when logging roads are being designed.

Natural features along streams

The Council believes that all streams in State forest should be protected in accordance with the principles previously outlined. In Chapter

I, Rivers and streams, however, the Council has referred to a number that have significant scenic and nature conservation values—in addition to those stream sections bordered by rainforest. These are the Snowy, Brodribb, Goolengook, Errinundra, Combienbar, Bemm, Cann, Thurra, Wingan, Genoa, Wallagaraugh, Betka, and Mueller Rivers.

Recommendations

- E1 That the area of 542 000 ha, shown on Map A, be used in accordance with the principles outlined above to:
- (a) supply water and protect catchments and streams.
 - (b) produce hardwood timber.
 - (c) conserve native plants and animals, and provide opportunities for the development of wildlife conservation techniques
 - (d) provide opportunities for open-space recreation (including hunting) and education
 - (e) produce honey, forage, gravel, sand, road-making materials and other forest products.
 - (f) provide opportunities for mineral exploration and mining, subject to the principles and guidelines outlined in Chapter P, Mineral and stone production.

and that it become State forest, and be managed by the Department of Conservation, Forests and Lands.

Note:

This recommendation covers land previously recommended for hardwood production and uncommitted land, with the exception of areas for which other recommendations have been made in this review.

- E2 That the utilization of pulpwood be permitted if the safeguards listed below can be fully satisfied:

that

- (a) it be tied strictly to the harvesting of sawlogs in an integrated operation unless it is obtained from silvicultural thinning programs in regrowth stands aimed at providing a higher production of sawlogs at final harvesting.

- (b) it be permitted only on those areas that presently carry or have the potential to carry forests greater than 28 metres top stand height, with the area of these forests specified in legislation together with the maximum volumes of both sawlogs and pulpwood that can be utilized, consistent with the maintenance of regional sustainable yield.
- (c) it be permitted only on those areas that have been subject to a detailed land capability study, and then only in accordance with the erosion-control measures specified in that study.
- (d) an independent monitoring committee, as referred to in the Timber Industry Strategy, be established to oversee all aspects of timber utilization under the value adding utilization system.
- (e) harvesting of timber proceed in accordance with a Regional Code of Forest Practice, approved only after community consultation, which incorporates the principles outlined in the land use goals above.
- (f) further research programs be established to monitor the environmental effects of harvesting operations and modifications to operational procedures and principles be progressively made as new information becomes available.
- (g) rotation lengths in East Gippsland State forest continue to be geared to the production of high-quality sawlogs, with a minimum length of 80 years.

and that

- (h) a range of silvicultural strategies for achieving adequate regeneration within State forest be investigated and evaluated by the Department of Conservation, Forests and Lands, and those that are determined to be the most ecologically and environmentally appropriate methods for East Gippsland forests be adopted as soon as possible.

E3 That flora and fauna surveys be expanded to include conservation

reserves and that data be collected on invertebrates and significant aquatic fauna, and on sites of historical, archaeological, or Aboriginal cultural significance.

E4 That the visual management zones identified in the region by the application of the Visual Management System be incorporated in regional plans and managed accordingly.

E5 That the following values in areas of State forest listed in the schedule at the end of this chapter be protected by the implementation of management prescriptions.

E6-7 That the areas of State forest shown on Map A and totalling 7000 ha be first considered when proposed agricultural development, agroforestry, forestry-related development and forestry research, tourism development, or other developments associated with planning strategies are investigated.

Note:

The aspects of salting referred to require further investigation.

E8-9 That the area of 22 500 ha shown on Map A be used for education and research associated with forestry management operations.

E10-14 That the areas of State forest listed below and shown on Map A be available for recreation and township uses as appropriate and for developments that have been sensitively planned to take account of environmental features and that fulfill the aims of local and regional planning strategies.

E10 Marlo (97 ha)

E11 Bemm River (93 ha)

E12 Tamboon Inlet (210 ha)

E13 Gipsy Point (60 ha)

E14 Mallacoota (2400 ha)

Note:

In the event of development taking place within the area indicated at Mallacoota, a buffer may need to be defined between the development and the Croajingolong National Park—to be

used for a variety of purposes, including fire-protection.

E15 That the areas indicated generally on Map A be used to conserve rainforest.

that

- (a) each area be protected by a buffer, the width of which should be delineated taking into account the factors outlined earlier
- (b) when logging operations are conducted in the adjoining forests, no tree is to be fallen into the rainforest or buffer
- (c) passive recreation such as nature study be permitted
- (d) logging and grazing not be permitted
- (e) all plans for new roads or road improvement works for those sections falling within rainforest should be submitted to the authority managing the rainforest for approval

and that they be permanently protected according to a procedure to be established by the Council in a future investigation of rainforest.

Notes:

1. At the scale of mapping used, the boundaries to the areas cannot be accurately defined nor are all the areas of rainforest indicated.

2. Further areas of rainforest may be identified in the future and this recommendation should also apply to these areas.

E16 That the Department of Conservation, Forests and Lands investigate the schedule of logging with a view to delaying, as long as possible, harvesting of the areas of State forest shown on Map A, namely the Brodribb River (north branch) and Coast Range (south)

and that they be managed in the interim to maintain their nature conservation values.

Schedule of values to be protected in State forest

Recreation and landscape

- Outstanding views from the summits of Mount Ellery, Mount Raymond, Mount Kaye, Genoa Peak, Maramingo Hill,

Mealing Hill and the Three Sisters; along parts of the Bowen Range, Coast Range, and the southern escarpment of the Errinundra Plateau; and along major forest roads including the Yalmy Road, Pinnak Road, Errinundra Road, and Greens Road, the Princes Highway, Bonang Highway, and the Cann Valley Highway.

- Attractive cascades on Tonghi Creek, north of the Princes Highway, and waterfalls on several tributaries of the Combienbar River.

Nature conservation

- All plant species that are included in a "List of Rare or Threatened Plants in Victoria" prepared by the Department of Conservation, Forests and Lands, or are considered by A. C. Beauglehole ("The Distribution and Conservation of Vascular Plants in the East Gippsland Area, Victoria") to be either rare or otherwise significant.
- occurrences of *Cryptostylis hunteriana* adjoining the Old Coast Road, Sydenham Inlet Road, and East Wingan Road (this species is classified as vulnerable on an Australia-wide basis; areas in which it occurs require burning intervals of 5-8 years, preferably in autumn)
- populations of the rare *Eriostemon virgatus* and *Callistemon pallidus* in the vicinity of the Three Sisters
- stands of the rare tree-fern *Cyathea cunninghamii* in the catchments of Young's Creek, Bungywarr Creek, and Pheasant Creek
- populations of rare or uncommon species such as *Gompholobium glabratum*, *Lindsaya microphylla*, *Poa affinis*, and *Poa induta* in the West Thurra River catchment
- a population of *Diuris punctata* on Tobins Creek
 - a population of *Pterostylis cucullata* on the Yalmy Road at the Serpentine Creek crossing.
 - a population of *Thelymitra mathewsii* in State forest north-west of Genoa
 - sub-alpine wet heathlands and montane sclerophyll woodlands along the Delegate River, Queensborough River, and Craigie Bog Creek

- The Mount Buck area has several sites of botanical significance including occurrences of rare species such as satinwood, the western limit of the distribution of Bower Wattle, and a taxonomically interesting occurrence of different forms of the genus *Tieghemopanax*.
- The upper part of Tennyson Creek catchment should be managed in such a way as to retain its nature conservation values and supplement the adjacent flora reserve in New South Wales.
- Stands of *Casuarina* woodland in the Yeerung River catchment and other parts of the study area are known to be important feeding areas for the glossy black cockatoo.
- The endangered long-footed potoroo has been found in a range of forest types. The largest known population is in Bellbird Creek and adjacent catchments, and timber-harvesting operations should be suspended

there pending determination of the habitat requirements of this species.

- Maternity sites of the eastern horse-shoe bat and common bent-wing bat should be protected where these have been identified.
- Particular attention should be given to the conservation of the greater gliders, yellow-bellied glider, tiger quoll, platypus, eastern water dragon, sooty owl and powerful owl.

Historic sites

- sites of interest referred to in a report by G. Butler on "European History in East Gippsland", in particular, the Stringer Knob fire-tower, Gippsland Boulder Reef Mine, and the now disused water-supply reservoir on Young's Creek.
- sites of significance associated with Aboriginal culture or occupation throughout State forest need to be identified and protected (management of such areas should involve the local Aboriginal community).

F. Flora reserves and flora and fauna reserves

In addition to the floristic and wildlife values of the parks that have been recommended in the East Gippsland area, a number of areas contain native vegetation with considerable floristic importance. Others are important not only for their floral values but also because of the significance of wildlife populations and habitat they contain.

Council has recognized the special conservation significance of these areas and has accordingly recommended their reservation as flora reserves or flora and fauna reserves. They are set aside primarily to conserve species that may be rare or endangered, and also other plant associations and animals that have particular conservation significance. Timber production from these areas would not be permitted.

In all such reserves, suppression of fires remains the responsibility of the Department of Conservation, Forests and Lands. Appropriate fire-prevention measures such as maintenance of fire access tracks and protective burning will be carried out where necessary as will the control of vermin and noxious weeds.

Existing reserves

Recommendations

- F1- That the areas indicated on Map A and
F5, listed below continue to be used for those
F11 purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Flora reserves

- F1 **Mortle Range** (120 ha)
F2 **Wood Point** (40 ha)
F3 **Brodrigg**

That the area of 2800 ha shown on Map A be used to preserve the warm temperate rainforest and riparian forest along the Brodrigg River as well as box-ironbark woodlands on the drier slopes and that it be permanently reserved under section 4 of the *Crown Land*

(*Reserves*) Act 1978 and be managed by the Department of Conservation, Forest and Lands.

Note:

The western boundary of this reserve lies 200 metres to the east of Lightwood Track and Coulsens Track.

F4 **Cabbage Tree Creek** (1700 ha)

Note:

Portion of this reserve is now included in the Lake Curlip Wildlife Reserve (see Recommendation C 4).

F5 **Maramingo Creek** (320 ha)

Flora and fauna reserve

F11 **Brodrigg River** (36 ha)

Note:

Some of the areas previously recommended as flora reserves are now proposed for inclusion in parks: Delegate River and Goonmirk Rocks (Errinundra Plateau National Park—A8), and Mount Kaye, Jones Creek and Beehive Creek (Coopracambra-Kaye National Park—A13). The Kanuka Creek Flora Reserve is to become part of the State forest.

New flora reserves

Recommendations

- F6- That the areas indicated on Map A and
10 described below become flora reserves and be used to:

- (a) conserve plant species and associations that
- (b) honey production be permitted
- (c) passive recreation such as nature study and picnicking be permitted
- (d) grazing and logging not be permitted

and that they be permanently reserved under section 4 of the *Crown Land* (*Reserves*) Act 1978 and be managed by the Department of Conservation, Forests and Lands.

F6 St. George Plain (350 ha)

St George Plain is the largest and probably the most representative example of the grass-tree plain variant of coastal heathland in East Gippsland. The rare leek orchid—*Prasophyllum viride*—also occurs here.

F7 Addition to Maramingo Creek (170 ha)

This area contains important heathland, which is contiguous with similar heathland in the existing reserve and which is known to contain several rare Victorian plants.

F8 William Hunter Flora Reserve (1 ha)

This is the land now used as a reserve for the preservation of flora west of allotment 48C, Parish of Orbost East. It contains a population of two rare orchids, *Cryptostylis hunteriana* and *Cryptostylis erecta*. The former species requires sensitive management in that its swampy habitat should be burnt at intervals of between 5 and 8 years to maintain population numbers.

F9 Arte River (100 ha)

This area contains one of the few examples where cool temperate and warm temperate rainforest elements overlap.

The rainforest overstorey has southern sassafras and lilly pilly as co-dominants. The former species is typical of cool temperate rainforest while the latter is dominant in warm temperate stands.

Note:

It was previously recommended as a scenic reserve.

F10 First and Second Islands (23 ha)

These islands support remnant stands of warm temperate rainforest near the mouth of the Snowy River, which is known to contain one of three known populations of the rare yellow elderberry (*Sambucus australasica*).

Note:

The Department of Conservation, Forests and Lands is proposing to carry out extensive works to rehabilitate these islands by revegetating them with rainforest species and initiating a noxious weed eradication program.

New flora and fauna reserve

Little Bog Creek

This reserve incorporates portion of the catchment of Little Bog Creek, which is known to contain populations of at least 28 significant plants; many of these are not known to occur in existing conservation reserves, and one species, yellow eyebright (*Euphrasia scabra*), is regarded as one of Australia's rarest plants. The area also contains representations of the major vegetation communities recorded for the Coast Range area.

Some of the fauna recorded here are also highly significant, including the giant burrowing frog, Latham's Snipe, and the sooty owl, which may rely heavily on the populations of yellow-bellied gliders known to occur here. The toll forests adjacent to the Coast Range Road also support a diversity of arboreal mammals and a high density of greater gliders.

Recommendation

F 12 That the area of 345 ha, shown on Map A, be used to:

- (a) conserve native plants and animals that
- (b) passive recreation such as nature study and picnicking be permitted
- (c) grazing be phased out
- (d) hunting and use of firearms not be permitted.

and that it be permanently reserved under Section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation, Forests and Lands.

G. Bushland reserves

Throughout the predominantly agricultural regions of the study area, a number of parcels of public land carry remnants of native vegetation. This vegetation, particularly the ground flora, has often been modified from the original by grazing and invasion of weeds. The native tree species remain, however, and these areas provide landscape diversity, particularly where more intensive agriculture is resulting in a gradual reduction in the numbers of trees on freehold land.

Council recommends that several of these small remnants of the native vegetation should become bushland reserves. Their major uses are to maintain the distinctive Australian character of the countryside and to provide diversity in the landscape. When accessible, they may also provide some opportunities for passive recreation in relatively natural surroundings, but it is not intended that they be developed for recreation. For some the only access is via an unused road covered by an unused-road licence, which should continue subject to the approval of the Department of Conservation, Forests and Lands. These bushland reserves are generally too small to have major significance for fauna conservation, although some may be important for migratory birds.

Management should aim at the maintenance of the native flora, particularly the tree species. Limited gravel extraction, low-intensity grazing, and the cutting of small amounts of firewood and an occasional post and pole are not necessarily incompatible with this primary aim, provided they are carefully planned and controlled and do not spoil the appearance of the reserves, particularly as viewed from roads and lookout points. These uses may not be appropriate to all reserves. In some instances the land manager may have to exclude them, at least temporarily, in order to permit regeneration of tree species.

In all bushland reserves the suppression of fires remain the responsibility of the Department of Conservation, Forests and Lands. Appropriate

fire-prevention measures will be carried out where necessary.

Existing reserves

Recommendations

- G1- That the bushland reserves shown on
G3 Map A and listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.
- G1 Mount Bendock (165 ha)
G2 Cann River (10 ha)
G3 Mallacoota (30 ha)

Additional bushland reserve

Recommendation

- G4 That the area indicated on Map A and described below be used to:
- (a) maintain the local character and quality of the landscape
- that
- (b) passive recreation such as picnicking and walking be permitted
 - (c) honey production be permitted
 - (d) grazing be permitted subject to the approval of the land manager
- and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Conservation Forests and Lands.
- G4 Mortimers Paddock (15 ha in the Township of Mallacoota)

Note:

A number of interesting plant species are located in this reserve, and these should be protected.

H. The coast

The coastline of the State is a resource of great value for recreation, for nature conservation, and for the preservation of features of historical interest.

In formulating recommendations for public land along the coast, Council is aware that coasts represent a dynamic zone of interaction between land and sea, encompassing fragile environments.

The various management authorities of coastal land are required to ensure that their management is consistent with the State-wide coastal policies and strategies prepared by the Ministry for Planning and Environment.

All works proposed by committees of management or government agencies on coastal lands require prior consents or approval of management plans by either the Minister for Planning and Environment, for areas within Port Phillip Bay, or by the Coastal Management and Coordination Committee, for the coastline outside Port Phillip Bay.

Coastal reserves

A coastal reserve is an area of public land on the coast set aside primarily for public recreation, education, and inspiration in coastal environments. Coastal areas specifically reserved for some other purposes (parks, wildlife reserves, sites for navigational aids, or major ports) would not be included in the coastal reserve.

Aboriginal middens occur frequently along the coastline.

Recommendations

- H1- That the areas indicated on Map A and
H2 listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.
- H1 **Marlo** (150 ha)
H2 **Mallacoota** (665 ha)

Notes:

1. The area previously recommended as the Lake Tyers coastal reserve is now proposed for inclusion in the Lake Tyers State Park (A15).
2. Portion of the previous Corringale Creek-Sydenham Inlet coastal reserve is proposed for inclusion in the Sydenham Inlet-Cape Conran coastal park (A16).
3. Uncontrolled access between the road and beach in the vicinity of Bastion Point-Mallacoota—is damaging vegetation and aggravating erosion along the coastal cliff, and some paths terminate on the cliff edge. This situation should be investigated with a view to providing controlled access to the foreshore.
4. Portion of the previously recommended coastal reserve north of the Betka River estuary is now included in State forest, while portion of the public land associated with the Mallacoota Aerodrome is now proposed for inclusion in the coastal reserve (see Recommendation Q 12).

Scenic coasts

A scenic coast is defined for the purpose of these recommendations as a coastline of outstanding beauty that remains in a relatively unspoilt state. This quality is derived primarily from natural attributes, but may be supplemented or enhanced by man-made features such as lighthouses that serve to dramatize the landscape, or by pleasant rural-landscape elements.

Some of the coastline in this area fits this description, and is an important component in the State's coastal landscape heritage. The Council believes that it is important to protect the landscape qualities of such coastlines, and that such areas should be used primarily for public enjoyment, education, and inspiration in coastal surroundings in a manner that will leave landscape values unimpaired.

In making these recommendations for the East Gippsland area Council has taken into account the landscape qualities of the coastline elsewhere in the State.

Recommendation

- H3-** That those portions of the East Gipps-
- H5** land coastline indicated on Map A continue to be designated scenic coast and that planning and management be carried out in these areas as approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

I. Rivers and streams

Public land water frontages

Along a number of rivers and streams in the study area, a strip of public land has been reserved between the water and adjacent public land or alienated land. In most cases, no public land strip adjoins land alienated before 1881, and some properties in the study area have titles that extend to the banks or even incorporate the bed and banks of a stream. Thus streams and rivers have either no public land water frontage or a discontinuous one. The recommendations that follow do not apply to privately owned frontage.

The locations of public land water frontages are shown on parish plans, which are available to the public from the Central Plan Office in the Department of Property and Services. These frontages may have a surveyed boundary of short irregular lines or be of specified width (varying in particular instances from 20 m to 60 m) along each bank. In some cases this land has been reserved for public purposes under the *Land Act* 1958 and in others it is unreserved. The land usually comes under the control of the Department of Conservation, Forests and Lands while in all cases the Rural Water Commission controls the water.

Each of these authorities may delegate some of its responsibility to local bodies. The Department of Conservation Forests and Lands may form committees of management for public purposes, while Management Boards or drainage trusts under the guidance of the Rural Water Commission may be formed in certain areas. The Department controls forest produce on public land water frontages, except where a committee of management has been formed. Public land frontages alongside artificial water storages and aqueducts are often controlled by the water supply authority that controls the water.

Adjoining occupiers often hold public land water frontages under licence for grazing purposes. Special conditions may apply to the licences—for example, to permit cultivation. The licence system has advantages in that licence-holders are required to control noxious weeds and vermin on the frontage. This control would be extremely difficult and expensive to

achieve in any other way. When a frontage is held under licence, boundary fences are normally extended to the water's edge. In the past, licensees often discouraged public access because of an understandable fear of damage, intentional or otherwise, to property. Vandalism and littering are problems in many areas open to the public, and firm action by authorities with management responsibilities is often required. Control is obtained through the normal exercise of fire, litter, firearms, and other regulations, although it is evident that more effective policing is required, particularly at weekends. Education of the public to understand the rural environment is perhaps the best solution in the long run.

These licenced river frontages are, however, public land; they are often valuable for low-intensity forms of recreation such as walking, fishing and observing nature, and provide access to extensive lengths of streambank. Following the *Land (Amendment) Act* 1983, members of the public may "enter and remain for recreational purposes" onto licenced frontages. Licensees are required to erect and maintain a suitable means of pedestrian access to the water frontage.

This condition had not been applied to the majority of existing licences and Council believes that in some situations, for example along popular fishing streams, the provisions of stiles would facilitate pedestrian access along public land water frontages and would reduce damage to fences and avoid gates being left open. This would be particularly appropriate on sections of the Lower Snowy, and the Genoa River at Wangarabell and where it meets the Princes Highway. Public land frontages that are unlicensed have no restriction on public access, although use of vehicles is controlled by the *Land Conservation (Vehicle Control) Act* 1973. They are, however, normally fenced off from adjacent freehold land. The landholder has no obligation to provide access through freehold land to the frontage, and nothing in these recommendations suggests that this situation should change.

The maintenance of a vegetation cover along stream banks is important in preventing soil erosion and in preserving the local landscape.

Public land water frontages are sometimes valuable for nature conservation as well, as they may provide corridors for movement of nomadic and migratory species, or support native plants and animals that are no longer found in surrounding areas. In too many cases, however, the provisions of the relevant Acts have not been enforced effectively, and such public land water frontages have been progressively cleared of native vegetation. This is the case in East Gippsland, and much of the remaining vegetation on frontages adjoining freehold property is in a degraded condition.

Public land water frontage reserves

Water frontage reserves are defined for the purpose of these recommendations as being all existing water frontages and other reserves or unreserved public land adjoining streams except for those areas, not currently reserved as a water frontage, that have been set aside elsewhere in these recommendations whether as part of a large reserve (such as national park or State forest) or for some special purpose (such as a flora, recreation or streamside reserve).

Recommendation

- II That public land water frontage reserves continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

River management

River Management Boards (previously known as river improvement trusts) are constituted under the *River Improvement Act 1958*, as amended by the *Water Acts (Amendment) Act 1985*. With the rationalization of boundaries proposed following the Public Bodies Review Committee's eighth report, the Snowy River Management Board's District would include the whole of that catchment within Victoria, while the East Gippsland Rivers Management Board's District would include the catchments of the rivers east of the Snowy.

Improvement works in rivers are designed to maintain the carrying capacity (for water supply or drainage purposes), to protect adjoining land from flooding and erosion, to maintain the

security of structures such as bridges on the flood plain, and to prevent siltation of the lower reaches by control of upstream erosion.

The works carried out include:

- erosion-prevention works on the banks—for example, planting of trees, the use of various materials for bank protection and the felling of trees that may be undermined (to prevent loss of bank material)
- clearance of waterways, by removal of snags within the bed of the channel, to maintain or improve discharge capacity

Such work is often made necessary by the changes that man has made to land use in the river catchment and on the flood plain. The following changes have generally reduced the value of the rivers for nature conservation:-

- Clearing of vegetation has increased run-off and reduced time of concentration of storm flows. The situation is sometimes aggravated by overgrazing and unwise cultivation in the catchment and along the river banks, accelerating soil erosion and transport of sediment to the stream. Increases in urban development—with disposal of storm water directly to streams—have also altered flow regimes.
- Regulation of stream flow by water storages and use of streams to transport water for irrigation and domestic use also change the natural flow regime.
- The construction of barriers such as road embankments and bridges, through which the river must pass, has often resulted in substantial modification of the bed and banks. Present legislation requires that all proposed replacement or new structures across waterways, flood plains, and depressions are referred to the Rural Water Commission and to the River Management Board, where one is involved, for approval.

River management authorities, in attempting to cope with the consequences of these changes carry out works that sometimes adversely affect landscape and nature conservation values, but ultimately could enhance these values.

Removal of snags from the centres of wide streams damages fish habitat, but the tethering of these snags against the banks may provide alternative fish habitat, as well as protecting the

banks from erosion. Realigning and regrading of eroding beds and banks often removes holes and back waters of value as fish habitat and for angling and swimming in a particular location. On the other hand, these operations, in preventing erosion, reduce transportation of silt.

River improvement works are sometimes aesthetically displeasing, particularly during construction and in the early stages after completion, but their ultimate aim is to prevent erosion and to allow re-establishment of vegetative cover along the stream banks.

River management boards are required to act within their District as defined under the *River Improvement Act 1958*. Where such Districts encompass only the stream environs, or part only of the stream, they may be able to treat only the symptoms of problems, as the causes may lie in the catchments beyond the area of their responsibility. There is thus little opportunity in the design and implementation of works for consideration of their likely impact on areas outside the Boards' Districts.

The Minister for Water Resources recently established two task forces to investigate and make recommendations on stream and catchment management throughout Victoria. The first of these was appointed to review those recommendations of the Public Bodies Review Committee's Eighth Report (May 1983) that related to restructuring of River Improvement and Drainage Trusts. The Report of this task force, now accepted by the Minister, recommended adoption or modification of the Review Committee's various proposals, to provide for the formation of River Management Boards with Districts embracing the whole or at least substantial parts of complete catchments. The report also recommended the establishment of Catchment Co-ordinating Groups, representing local interests and all appropriate agencies, to strengthen consultation and co-ordination between the numerous interests in stream management, with respect to catchment land use activities which impact on stream management. These recommendations are now open to implementation if acceptable to the local community. The *Water Acts (Amendment) Act 1985* enables implementation of these recommendations.

The second, known as the 'State of the Rivers Task Force' was established to examine and recommend the future technical and financial arrangements for an effective regionally-based river management system.' This task force has completed its work and its report was recently published. It examines the requirements, costs and funding arrangements for an accelerated program of catchment improvement and for a program of effective management of Crown river frontages.

The flow regimes of some rivers must of course be modified and flood plains used for agriculture, but it is appropriate to look at the principles of the natural system in seeking solutions to the problems that thus arise rather than to move further from those principles. The Council believes that the following principals should apply in determining the need for and design of river improvement works:

- Where problems in river management arise, the whole catchment should be considered in seeking a solution.
- Where flood control in a catchment is necessary, planning strategies should include consideration of ways of reducing run-off from the catchment.
- Total flood control is seldom practicable. In the case of minor flooding it may often be appropriate to take action to minimize the consequences of flooding rather than attempt to prevent it.
- An adequate vegetation cover should be maintained along stream frontages to stabilize the banks and to reduce the velocity of flood-waters as they leave and re-enter the stream course.
- Structures such as road embankments and bridges on flood plains are a variation of the natural situation, and consideration should be given in their design to their effect on the flood pattern (see note 3 below).
- Works carried out within the bed and banks of a stream to change the alignment, gradient, or cross-section should be kept to the minimum necessary.
- Consideration should be given in the design of works to maintaining or enhancing landscape values and the value of the stream for recreation and as a habitat for wildlife.

East Gippsland catchments

Many catchments throughout Victoria have been substantially modified from their original condition, primarily to meet the needs of a growing population. By contrast, however, most catchments in East Gippsland are still predominantly forested, and although many have been subjected to various forms of human disturbance, some remain in an essentially natural condition. They therefore constitute an invaluable resource as reference catchments against which to judge the state of many other streams in south-eastern Australia.

A number of these little-modified catchments are proposed for inclusion in parks and other reserves, but many others, although they have been subjected to *minor disturbance*, continue to be of great importance for conservation and the supply of high-quality water.

These functions should continue to be recognized by the managing authorities and incorporated in management plans for the region. The Council considers that the managing authority should consult the Department of Water Resources when proposals that may effect the quality or quantity of water in streams are being considered.

Parts of the catchments of several of the East Gippsland rivers lie interstate. In some of these, particular problems have been indentified. For the Snowy River system, there have been reports of increased siltation in the lower reaches over recent years, reduced flows since 1965, particularly in the medium to low flow range, and increased salinity in the lowest 16 km of the river resulting from ingress of sea water. While most of the Victorian portion of the catchment is forested, more than 50% of the catchment lies in New South Wales, and the bulk of that area has been developed for agriculture. Tributaries there are commonly degrading, adding large quantities of sediment into the river system.

In addition, the Snowy Mountains Hydroelectricity Scheme diverts water from the upper Snowy River, contributing in part to the changes in the flow regime noticed in the lower reaches.

The Genoa and Wallagaraugh River catchments are similar in that both contain extensive areas of erodible soils, both are largely forested in their Victorian portions, and both

have substantial areas in New South Wales. The interstate portion of the Genoa catchment contains State forest, freehold land partly cleared for agriculture, pine plantations on both public and feehold land, and national parks. The Wallagaraugh catchment is virtually all State forest, much of which has been harvested for woodchips. These rivers both supply large volumes of silt, eroded from their upper catchments, into Mallacoota Inlet.

The Snowy, Genoa, and Wallagaraugh Rivers illustrate the need for interstate co-ordination and co-operation in the planning of works that could have an effect on lower-catchment bed and bank stability. The specific causes, and solutions to the problems of salinity in the lower Snowy River and silting in the Mallacoota Inlet, will need to be investigated in detail.

Recommendations

- I2 That a working party comprising representatives from State and local agencies in both Victoria and New South Wales be established to develop a co-ordinated management approach to catchment and river management issues associated with the Snowy, Genoa, and Wallagaraugh Rivers, with particular emphasis on salinity and siltation in their lower reaches.

Note:

The Council is aware that the Department of Water Resources has already initiated steps toward the establishment of a working group, which could adopt this task.

- I3 That the assessment of the need for, and the planning and implementation of, any works involving changes to the beds and banks of streams incorporate the principles approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.
- I4 That the managing authority consult the Department of Water Resources when proposals that may affect the quality or quantity of water in streams are being considered.

Notes:

1. The Rural Water Commission has formed a Standing Consultative Committee to advise the

Commission on river works. This committee comprises representatives from the following: Rural Water Commission; Department of Water Resources; Conservation Council of Victoria; Department of Conservation, Forests and Lands; and Association of Victorian River Improvement Trusts. The Committee is convened by a representative of the Rural Water Commission.

2. The Standing Consultative Committee has prepared three documents that expand on the principles set out above. The first of these documents, 'Guidelines for River Management, 1979', requires plans for all works other than minor ones, together with an assessment of their environmental consequences, to be submitted to all relevant agencies for consideration prior to the commencement of works. The aim of the guidelines is to ensure an optimum balance between structural improvements on the one hand and the maintenance or enhancement of the stream's landscape values and its value as habitat for wildlife and for recreation on the other.

In 1982 the Committee prepared 'Revegetating Victorian Streams', to provide government, semi-government and local government bodies, community groups, and land-owners with information on the vegetation of stream systems, and to encourage maintenance and enhancement of the environment.

More recently (November 1983) the Committee produced 'The State of the Rivers' report in which it recommended the establishment of the second task force referred to above. This presents a general review of the state of Victoria's rivers, drawing attention to the undesirable changes in the river environment that have occurred over the past century. It develops the concept that river management works should be based on a whole catchment philosophy.

3. Information relating to the works that may be undertaken on flood plains is included in the report 'Flood Plain Management in Victoria', produced by the Victorian Water Resources Council.

4. The Rural Water Commission recently released a fourth publication 'River Management—a Glossary of Terms' to help explain the terminology of river management.

Eductor dredging

Eductor dredging for alluvial gold in stream-beds has become a popular activity, particularly with current high gold prices. An eductor dredge is a floating device designed to treat gold-bearing sediment from the bed of streams. It is powered by a small internal combustion engine and comprises a suction nozzle and hose attached to a small floating platform carrying a riffle or sluice box. Gravel and finer sediment are pumped from the stream-bed, passed through the riffle or sluice box—which traps any gold—and discharged back into the stream. The process is essentially small-scale, normally involving only two operators—one working in the water to shift large rocks and guide and nozzle, the other assisting at the dredge or from the stream bank. The device is usually collapsible and can be transported by a conventional vehicle.

Eductor Dredge Licences are issued for a period of 1 year under the provisions of section 66A of the *Mines Act* 1958 and part 6 and Schedule 15 of the *Mines (Mining Titles) Regulations* 1983. Part 6 of the *Regulations* details restrictions on dredge design and operation while Schedule 15 lists prescribed zones and streams available for eductor dredge use. Schedule 15 is reviewed and revised on an annual basis following consideration by the Mining Consultative Committee of recommendations from an Interdepartmental Committee on Eductor Dredges. This Committee comprises representatives from: the Department of Industry, Technology and Resources; the Department of Conservation, Forests and Lands; the Ministry for Planning and Environment; and the Rural Water Commission. It annually prepares a list, which must be approved by both the Mining Consultative Committee and the Minister of Water Supply before being ratified by the Governor-in-Council. The list then becomes effective as Schedule 15 for a period of 1 year from 1 November of the year of issue.

While eductor dredging has low establishment and operational costs, and is an effective means of recovering gold, some concern has been expressed over the possible effects of dredging on stream-bed structure, macro invertebrate communities, and stream-bank stability.

Elevation in levels of suspended solids or alterations of the bed or flow characteristics of rivers resulting from eductor dredge use may degrade invertebrate habitat, leading to reductions in species composition and diversity.

While the banks of streams are excluded from dredging activity, the construction of access points into streams is a potential cause of erosion and water-quality degradation.

To date only limited studies of eductor dredging have been carried out. Results indicate that coarse stream-bed material suspended by passage through a dredge settles back only a short distance downstream. Finer, silt-size particles remain suspended for a greater distance. Turbidity has only been observed to result from dredges where algal growth or stream-banks are disturbed. Further studies are required, however, before general conclusions can be drawn.

In some rivers where mercury occurs, either naturally or as a result of ore treatment during past gold-mining, this metal has been recovered by eductor dredging.

For 1986-87 the only stream available for eductor dredging in East Gippsland is the Brodribb River between its junctions with B.A. Creek and Goongerah Creek. Tributaries of the Brodribb are not available for dredging.

Some river and tributary catchments in East Gippsland have been identified as being in an essentially natural condition. Some of the streams are known to contain important viable populations of native fish species whose status is vulnerable or endangered. Following detailed surveys, some others may be found to have significant aquatic values, such as a high diversity of invertebrate fauna. The Council considers that, in accordance with its principles and guidelines for mineral production, some streams with values of special public importance should be excluded from eductor dredging. These streams should be determined by the Department of Industry, Technology and Resources, the land manager, and the Department of Water Resources. Any such determination should also take into account that streams may be used for domestic water supply purposes.

Recommendation

- 15 That rivers and streams in East Gippsland be assessed with respect to their nature conservation, recreation and scenic values, bed and bank stability and that those streams or parts of streams that are of special significance be excluded from allocations for eductor dredging.

Natural features zones

In general, the foothills of the study area lack the outstanding natural values that characterize the adjacent mountainous and coastal regions. The relatively uniform and unexceptional nature of much of this public land highlights the significance of the area's major river valleys, which contain many of its most important natural, scenic, and recreational features.

Major rivers and streams invariably constitute one of the most significant scenic elements in the landscape as well as providing a natural focus for recreation. For example, one of the area's scenic drives follows the Bemm River and its tributary the Errinundra River north of Club Terrace.

The variety and nature of the flora and fauna in the riparian zone often give it a greater environmental significance than the surrounding relatively dry, uniform forests. The riverine environment exhibits the typical focusing effect of a vegetation strip that is well suited to wildlife passing through a drier environment of less-favoured plant species. Also, the zone where the drier foothill and wetter riverine forests overlap contains the greatest variety of plant species and, therefore, the greatest diversity of faunal habitat types. Often the river valleys contain some of the more significant and attractive vegetation—such as the warm temperate rainforests in the lowland regions of the study area.

While it is not practical to create parks along each of the study area's major streams, Council considers the importance of these streamside areas warrants the adoption of management practices that have as their major aim the protection of these areas' special natural features, particularly as some of these streams provide an important link between the proposed parks in the mountainous regions of the study area and the Croajingolong National Park along the coast.

Council also believes there is further scope for the sympathetic development of recreational and interpretative facilities that would increase people's enjoyment and understanding of the area's river systems.

Recommendation

16 That, for those sections of streams indicated on Map A by cross-hatching, primary aims of management be:

- (a) the protection of natural and scenic values
- (b) the provision of recreational facilities and interpretive aids where this does not conflict with (a) above

that

- (c) timber-harvesting and gravel extraction not be permitted
- (d) any new roading be constructed only where essential for the purposes of management protection, and transport of timber and be designed to minimize effects on scenic and nature conservation values.

and that management be the responsibility of the authority managing the adjacent public land.

Notes:

1. Portions of some streams designated as Natural Features Zones also include areas for the protection of rainforest. Management in these portions should give priority to the protection of the rainforest, but should recognize that they also contain a valuable recreational and scenic resource.

2. The hatching on the map should not be taken as delineating exact boundaries to the natural features zones. It is intended that these zones should include both the visual corridor (comprising those parts of the valley that can be seen from the stream) and the environmental sequence from relatively dry foothill country, through the species-rich intermediate zone, to the riverine section. In many areas the visual corridor will include this sequence and as such will determine the width of the zone. In other places, however, not all of the environmental sequence will be visible from the stream and in these cases the natural features zone will extend beyond the visual corridor. As described below,

the extent of these zones will vary according to local circumstances. The zones should be delineated on management plans where appropriate.

In the lower reaches of some of the rivers where generally low stream-bed gradients have permitted the development of broad flood-plains, the zones would be relatively wide. This is the case with most of the natural features zones recommended in the East Gippsland area. In the mountainous stream segments towards the upper reaches of their catchments, the width of the natural features zones would be limited by rapid transition through the environmental sequence, a less obvious visual corridor, and reduced visibility owing to dense vegetation. The narrower zones should extend to include areas of importance for the conservation of significant plant species and the animal habitats that are associated with the streams, strong elements of the visual corridor (such as the short, steep ends of spurs and rocky outcrops), alluvial plains, areas of historic importance, and sites either used for or with potential for recreational activities.

The topography through which a stream passes generally gives a good guide to the width of the natural features zone. Streams have been divided into five segments, based, in general, on the gradient of the stream-bed: the steep headwaters, the mountainous, the steeply dissected hills, the foothills, and the lower valley segments. The zone indicated on the Thurra River, for instance, incorporates all five segments.

The lowest stream segment found in the East Gippsland area winds across a broad alluvial plain and has a bed gradient less than 0.5%. Density of vegetation commonly restricts the view from the stream to less than the full width of the alluvial plain. The natural features zone here would have a width of around 100 metres from each side of the stream.

Where necessary the width of the zone would increase up to 300 metres to incorporate the visual corridor and the environmental sequence. The visual corridor comprises the adjacent slopes (where these are short) up to the ridge line, and the steeper footslopes up to the point of inflexion (for the longer side slopes). The zone is also wider where site-specific natural or historical features such as those mentioned above occur, and adjacent to

road crossings where camping is a present or potential use. The Bemm River, for example, up to Club Terrace, is within this river segment.

The foothills stream segment has a continuous alluvial plain with broad sections, particularly at major tributaries. The gentle stream gradient ranges from 0.5% to 1%. On the outside of river bends, as for the lower segment the visual corridor is strongly expressed. The natural features zone includes these elements of the visual corridor and a strip on the alluvial plain, incorporating the environmental sequence. It has a minimum width of 80 metres and increases up to about 200 metres where necessary to include site-specific natural and historical features or recreation sites. The Errinundra River above Boulder Flat would represent this segment.

In the steeply dissected hill segment, the valleys may comprise a number of small alluvial flats or a continuous plain, flanked by long side slopes or by the short steep footslopes of spurs. The gradient of the stream-bed is expected to be between 1% and 2%. To incorporate the environmental sequence extending from the riparian vegetation onto the floodplain, the zone has a minimum width of 60m from each bank. This width would increase up to some 100m to include obvious expressions of the visual corridor such as steep footslopes which would also incorporate the environmental sequence to the drier slopes, or rock faces adjacent to the stream-banks. The zone would also include the other features mentioned above, such as recreation areas. An example of this segment would be the Errinundra River—below the junction of the East and West Branches.

In the mountainous segment, the alluvial flats are small and discrete, occurring in the wider bends or at confluences with major tributaries. The short steep footslopes of spurs flank much of this tract and where side slopes fall directly to the stream there is generally a narrow colluvial strip. The gradient of the stream-bed is expected to be between 2% and 5%. The natural features zone in this segment generally extends 40m from each bank to incorporate the environmental sequence on the floodplains or colluvial slopes. It would broaden where necessary to include steep rocky slopes adjacent to the stream and other special features as mentioned above. On the east branch of the

Thurra River, this segment is found upstream of the Thurra River road crossing.

Streams in the headwaters segment usually have no alluvial flats and the beds are rocky and steep—the gradient being generally greater than 5%. Stream-flow may be intermittent. Side slopes fall directly to the stream and vegetation may completely enclose the watercourse. The narrow environmental sequence here is incorporated in a zone about 20m from each side of the watercourse. In the headwaters of the east branch of the Thurra River, for example, this zone width extends down a tributary from the plateau near Mount Kaye. The tributary also passes through a section with a shallower gradient before again following a steep course through a gorge; reflecting redissection—following the Thurra Fault uplift—near the junction of Ordovician sediments and granite.

It is not intended that the width of natural features zones delineated under these guidelines would be less than the buffer strips along streams required by forest management prescriptions or delineated by land use determinations for a water supply catchment.

Streamside reserves

In many instances, small blocks of public land adjoin streams but are not included in the public land water frontage.

These blocks have, where appropriate, been designated streamside reserves. Some are currently reserved under section 4 of the *Crown Land (Reserves) Act 1978*; others are unreserved Crown land, although they may be licensed for grazing. Vegetation on these areas varies from open forests to grassland. Every effort should be made to conserve native trees on these reserves, where they exist, and to encourage regeneration or restoration where the vegetation has been depleted or destroyed.

Blocks of public land such as this have values for nature conservation and recreation. They allow public access to the river or stream, especially where access along the public land water frontage is difficult. The land manager may provide facilities for activities such as camping on streamside reserves in areas where conflict with nature conservation values are minimal.

It is intended that public land water frontages adjacent to or within a streamside reserve be managed by the authority responsible for that reserve.

Streamside reserves are separate and distinct from the public land water frontages described earlier in these recommendations.

Recommendations

- I7-** That the areas shown on Map A and
I10 described below to be used to:
- (a) provide passive recreation such as picnicking, walking, and angling
 - (b) provide opportunities for camping at the discretion of the land manager if this use does not conflict with the maintenance of the water quality of the adjacent stream
 - (c) conserve flora and fauna
 - (d) maintain the quality and character of the local landscape
 - (e) provide grazing, at the discretion of the land manager, if this use does not conflict with the maintenance of the water quality of the adjacent stream or with (a), (b) and (c) above

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation, Forests and Lands.

- I7** 34 ha, being allotment 10A, Parish of Tubbut.

Note:
The licensed removal of fencing material from portions of this reserve may continue.

- I8** 5.5 ha south of allotment 18, section A, Parish of Bidwell; near the Gap road crossing of the Delegate River.
- I9** 10 ha north of allotment 2A, Parish of Tonghi; between the Princes Highway and Tonghi Creek.
- I10** 8.5 ha, being the Camping Reserve north-east of allotment 9, section C, Parish of Maramingo on the Walla-garaugh River near Johnson Bridge.

J. Roadside conservation

The primary purpose of road reserves is obviously to provide for communication, transport, and access. However, vegetation along the road verges can have particularly high conservation, recreation, and landscape values, especially in agricultural districts where most of the native vegetation has been cleared. Geological features exposed in roadside cuttings are a useful adjunct to more detailed work involved in mapping the geology of an area and are often used as an educational resource.

Nature conservation

Vegetation on roads is important for nature conservation because in some parts of the State it often contains the only remnants of the region's native plant associations. Such remnants are valuable for preserving species with restricted distribution and genetically interesting variants of widespread species. They are often useful in land studies, as they may permit the original pattern of the vegetation to be pieced together. They also provide habitat (particularly in tree hollows) for some native animals, and have special significance as pathways permitting birds to move through the countryside on annual migration, or in search of food or nesting sites. While some roads retain wide strips of native vegetation, many are mostly cleared or otherwise greatly altered. Valuable remnants of native vegetation growing on the verges of some roads should be protected where possible.

The *Arthur Rylah Institute for Environmental Research, Technical Report Series No. 11*, September 1984, 'Conservation of Roadsides and Roadside Vegetation', gives a comprehensive review of values, methods of assessment, and management of roadsides for the purposes of nature conservation.

Accumulation of fuel along roadsides is a fire hazard of concern to fire-control authorities and it must often be reduced by burning off during cool weather. This burning off sometimes conflicts with scenic and conservation values and the Council believes that such burning should be restricted to strategically important areas and kept to the minimum consistent with efficient fire protection.

The Roadsides Conservation Committee, which comprises representatives from various interest groups and government departments, has prepared a set of guidelines that provide for both conservation and fire protection.

Recreation and landscape

In rural districts, vegetation along roads is often a major component of the landscape, breaking the monotony of cleared paddocks and accentuating the contours of the land. It provides a pleasant, variable road environment for motorists, and shady areas for rest and relaxation. The Council believes that as much roadside vegetation as possible should be retained when roads are being upgraded. If a major upgrading is being planned, the feasibility of purchasing a strip of private land should be considered in order to preserve good stands of roadside vegetation.

Management

Responsibility for the management of roadside vegetation is vested in various authorities, depending on the status of the road. The most important roads of the State (State highways, tourist and forest roads, and freeways) declared under the *Transport Act 1983* are completely under the control of the Road Construction Authority (9000 km). Main roads (14 500 km) are also declared, but are controlled jointly by the Road Construction Authority and local municipal councils. Vegetation on unclassified roads (about 98 000 km mostly minor roads) is under the care and management of municipal councils, although it is owned by the Crown. The Department of Conservation, Forests and Lands has the control of vegetation on unclassified roads that pass through or adjoin State forests. (Note: these figures are for all Victoria.)

Back roads

With increasing population and use of cars, a tendency has developed for through-roads in the State to be continually upgraded. Tree-lined back roads with gravel surfaces on narrow winding alignments are becoming increasingly uncommon. Yet for many people such roads best fulfil their need for contact with rural environments. The Council believes that a

conscious effort must be made to maintain the character of these roads, particularly when upgrading or realigning is being considered.

Generally the vegetation on road reserves, although it affects landscape values, is somewhat less important for conservation in East Gippsland than in areas that have been predominantly cleared for agriculture. The roadside environment of main roads does, however, depend largely on management of the road reserve. It is important that the managers concerned (usually the Road Construction Authority and the Orbost Shire Council), and the manager of adjacent public land, consider these landscape values, and the vegetation on the road reserve be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.

Recommendation

- J1** The road reserves throughout the study area continue to be used for communication, transport, access, surveys and utilities.

Landscape, recreation, and conservation values can best be protected by observing the following guidelines. The Council recognizes that many of these are already being implemented by the bodies responsible for the construction and maintenance of roads.

- When improvements to a road are being carried out, trees and shrubs on the road reserve should be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.
- Major works to realign minor roads carrying trees and shrubs should not be undertaken unless clearly warranted by the nature and volume of the traffic carried, and the managers of adjacent public land should be consulted regarding such works.
- Where re-alignment of a road results in a section of the old road being cut off, wherever possible that section should not be sold but used as a recreation and rest area or incorporated into an adjacent appropriate reserve.
- Where a pipeline or overhead wires are to follow a road carrying trees and shrubs in a rural district, every effort should be made to locate the easements on private land

alongside the road if this is already cleared, rather than clearing roadside vegetation to accommodate them.

- While recognizing the need for clearing or pruning vegetation close to power lines to reduce the associated fire risk, the State Electricity Commission should consult the Department of Conservation, Forests and Lands regarding the manner in which the risk posed by vegetation can be reduced, while at the same time reducing the environmental impact to a minimum.
- Road-making materials should not be taken from road reserves unless no suitable alternative sources are available. Any such removal should be done so as to ensure a minimum disturbance of the native vegetation, and the disturbed areas should be rehabilitated, where possible, with vegetation native to the area.
- Burning off, slashing, or clearing of roadside vegetation should be kept to a minimum consistent with providing adequate fire protection.
- Weeds and vermin on roads should be controlled by means that do not conflict with the uses given above.
- The various road management authorities, when planning to upgrade roads that have heavy recreational use, should give due consideration to recreational requirements, and give priority along such roads (when funds are available) to the development of roadside recreational facilities.
- On soils of moderate to high erosion hazard, road management authorities should ensure that pre-planning, design, construction, and funding of roads cater adequately for erosion prevention and control. Advice should be sought from the Department of Conservation, Forests and Lands.

Unused roads

When the State was being settled, surveyors provided access to every block by means of a surveyed Crown road. Many of these have never been used as roads, and they are usually held by the occupiers of the adjoining land under an unused-road licence.

Recommendation

- J2 That the following guidelines, approved by the government following publication of the final recommendations for the East Gippsland area in March 1977, continue to apply to unused roads:
- The clearing of native trees and shrubs other than noxious weeds should continue to be clearly prohibited in the conditions of unused-road licences.
 - A condition permitting public use of licensed unused roads should be written into unused road licences where necessary to provide practical access to public land.
 - Unused roads or easements should not be alienated if there is any likelihood that they will have value for future traffic, nature conservation, recreation, or other public use.

Roadside picnic areas

Along some roads, the reserve carries picnic areas and wayside stops. Council considers there is a need for additional areas in attractive locations off the road reserves, that could be used for relaxation and picnicking. Some picnic facilities should be provided.

Recommendation

- J3 That the recommendation that land management authorities establish roadside picnic areas in suitable locations, approved by the government following publication of the final recommendations for the East Gippsland area in March 1977, continue to apply.

It is proposed to incorporate the previously recommended McKenzie River Highway Park within the Bemm River Scenic Reserve (see Recommendation M3). Recent road re-alignment and bridge construction have reduced the value of this area as a highway park, but Council believes that, in conjunction with the adjoining Bemm River Scenic Reserve, it could be developed as a major scenic stop midway between Orbost and Cann River.

Roadside sites of habitat and/or botanical significance

Recommendations

- J4- J7 That, when widening or re-alignment of roads is proposed, sites of geological, habitat, or botanical significance that may be affected be investigated and every effort made to retain and preserve them.

A number of important sites along road reserves should be protected and these are listed below.

- J4 Occurrences of *Acacia maidenii* (Maiden's wattle) on the following road reserves:
- Rowe Road, west of Orbost
 - Burn Road, Newmerella
 - Various sections of Buchan-Bete Bolong-Orbost Road
- J5 The occurrence of the rare *Discaria pubescens* (Australian anchor plant) along the Lower Bendoc Road, Bendoc North.
- J6 The Occurrence of *Gahnia subaequiglumis* on roadsides in the Bonang district.
- J7 The isolated stand of *Pomaderris pauciflora* at Amboyne Crossing. This plant species is classified as rare, and its location on the road reserve makes it vulnerable to activities such as road widening or re-alignment.

Sites of historical importance

Recommendation

- J8 That, where items of historical significance are identified on road easements, every effort be made to preserve their historical character consistent with management practices and safety requirements.

Note:

Examples of the typical architecture and materials used in road-bridge construction during the first half of this century can be found along a number of roads in the East Gippsland area. The large timber-trestle road bridge

across Sardine Creek (1940) and the 100-metre-long timber trussed Genoa River Bridge (1926), on the Princes Highway, are typical examples.

MacKillop Bridge (1935), over the Snowy River at Deddick, is located near a ford used in the

early pastoral settlement of Gippsland. The substantial bridge now at this site indicates the measures required to maintain communications in a remote part of the State.

K. Education areas

Environmental education is a fundamental step in the conservation of natural resources; it has become an important part of school curricula, and forms the basis of courses for tertiary and adult students.

Environmental education is indispensably linked with field studies. It is concerned with studying and appreciating all sorts of environments—natural ones undisturbed by man's activities, natural ones manipulated to produce particular products such as hardwood timber, or drastically altered ones such as are found in urban and agricultural areas. One of its basic requirements is access to land.

Council, realizing that public land provides excellent opportunities for studies of a wide range of environments, has recommended that almost all public land (including parks, wildlife reserves, and State forest) be available for educational uses. Council believes that in most situations educational studies can take place without conflicting with the primary use for which an area is set aside. Indeed in some cases it is the manipulation of the land for the primary use that makes the area of value for environmental education. Council believes, however, that it is necessary for some relatively undisturbed land to be set aside specifically for educational uses, as unless this is consciously done, such environments will tend to be changed by other uses. In these areas education would be the primary use and other uses would only be permitted when not in conflict with the educational use. Activities permitted in education areas that may not be appropriate elsewhere should include long-term studies, collection of biological material, biomass studies, and the establishment of growth plots. They may also provide opportunities to demonstrate techniques of erosion control and the restoration of native vegetation and stream conditions to a more natural state.

In selecting land for education areas, the Council has sought to provide areas:

- giving examples of major land types
- with maximum diversity of vegetation types, soils etc., and with natural boundaries
- located with consideration of ready access by users

- located so as to minimize the danger that wildfires present to users
- located in proximity to other land types and to a variety of other land uses
- large enough to prevent over-use and to allow for zoning to protect areas of special value
- selected so as to minimize erosion and pollution hazard

No one organization should have the exclusive right to use a particular education area, as it is important that students have the opportunity to visit a number of education areas in various land types throughout the State rather than visiting the one site several times. Minimum facilities such as toilets and shelters would be required at each education area, and it would be desirable to have accommodation either on the area or at some nearby locality. Whether or not accommodation facilities are located on the education area will depend on its proximity to other areas of educational value in the region and also on the availability and location of existing accommodation. In forested areas accommodation and other permanent facilities should only be provided where adequate safeguards against fire can be made.

The Council believes that management plans for education areas should be prepared by the Department of Conservation, Forests and Lands. Planning and implementing the education aspects together with co-ordinating the use of areas should be done in consultation with the Education Department, other user groups in the education system, and with community bodies with an interest in environmental education.

Existing education areas

Recommendations

- K1, K2, K4 That the areas indicated on Map A and listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

- K1 Bidwell (350 ha)

Note:

Council is aware that the rare *Carex raleighii*, a small and inconspicuous sedge, has recently been recorded within the Bidwell education area. The Department of Conservation, Forests and Lands should ensure that the use of this area is consistent with the protection of this species.

K2 **Sardine Creek** (250 ha)

K4 **Serpentine Creek** (530 ha)

Relocation of education area

The existing education area representing coastal heaths and woodlands is at Bemm River. Much of it, however, is low-lying and in many places access is difficult, particularly in wet conditions. The new site for the education area—near Cape Conran—is more accessible, and it too contains representations of coastal heaths and woodlands. Geomorphological features at the Yeerung River and Cape Conran are nearby, and provide an additional educational resource.

Recommendation

K3 **Cape Conran** (780 ha)

That the coastal heath and woodland education area be relocated to the site indicated on Map A and used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

New education area

Mallacoota

The Department of Conservation, Forests and Lands has recently purchased a property adjoining the Mallacoota Road and the Inlet at Double Creek. It is proposed that this area be used for education purposes.

K5 That the area of 49 ha, being allotment 20, Parish of Mallacoota and shown on Map A, be used to provide opportunities for students of all ages to:

- (a) study the nature and functioning of reasonably natural ecosystems in a manner such that the integrity of those ecosystems is maintained as far as is practicable
- (b) compare the ecosystems within education areas with other nearby natural and modified systems
- (c) observe and practise methods of environmental analysis, and the field techniques of the natural sciences
- (d) conduct simple long-term experiments aimed at giving an understanding of the changes occurring in an area with time

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act* 1978, and be managed by the Department of Conservation, Forests and Lands.

L. Recreation

The term recreation includes the multitude of different activities that people undertake during their leisure time. In fact, the distinguishing characteristic of recreation is not the activity itself so much as the attitude with which it is undertaken—activities undertaken with little or no feeling of compulsion are almost certainly recreation.

Outdoor recreation is of particular interest to Council, as the public land of the study area provides important opportunities for it. Throughout, these recommendations refer to the many forms of outdoor recreation in a number of ways:

- Formal recreational activities include all organized sports and other group activities, while activities such as picnicking, fishing and hiking are grouped as informal.
- Passive recreation covers situations where the individual obtains his recreation through enjoying the sights, sounds and atmosphere of the surrounding environment while expending little physical effort. Examples are picnicking, nature observation, and strolling.
- Active recreation covers situations where the individual must expend considerable physical effort to obtain some mastery of physical forces in order to satisfy his particular recreational needs. Examples are playing organized sport, bushwalking, and water-skiing.
- Open-space recreation includes all recreational activities that require spacious outdoor surroundings, whether the activities be active or passive, formal or informal.
- Intensive recreation involves large numbers of people per unit area. For example, parts of Mallacoota, the Cape Conran foreshore, and the Marlo foreshore would be considered to be intensively used.

In view of the predicted increase in demand for outdoor recreation and the high capability of some public land to meet this demand, the Council, in making its recommendations, has suggested that the majority of public land should be available for recreational uses of some sort. Accordingly, it has set aside a variety of reserves that will provide for a wide range of

opportunities. Council could not, however, make recommendations covering in detail all the forms of recreation currently pursued on public land. These include activities such as swimming, bushwalking, orienteering, canoeing, fishing, hunting, fossicking, picnicking, horse-riding, boating, trail-bike riding and pleasure driving. Council believes that activities such as these can be accommodated, without detriment to other values, somewhere on public land. Consequently, Council points out that outdoor recreation in general is an acceptable primary or secondary use of much public land (except reference areas and some water storages and their buffers) and has left the details of recreational use to the land manager.

The various recreation activities differ in their requirements for types of land, size of area, and site location. They also differ in their impact on the land and on other activities (including other forms of recreation). Generally, any one activity pursued at a low level of intensity poses little threat to the environment and seldom conflicts with other activities. With increasing intensity, conflicts and problems can arise. There is always the problem of recreation damaging the environment it seeks to use.

Council therefore believes that the land manager should aim at controlling the levels and patterns of recreational use according to the capability of the area to sustain such use without irreversible damage or significant conflict with the primary purposes of the area, while at the same time avoiding unnecessary restrictions on usage. Special care will be required in the location and management of areas zoned for intensive recreation, to prevent environmental damage. Thus, more stringent restrictions can be expected in areas where the vegetation and soils are sensitive to damage (such as those occurring on granite soils), and where the natural environment or special natural features are being preserved.

Four particular forms of recreation that may require consideration by the land manager, whether now or in the future, are further discussed below.

Motorized recreation

Much outdoor recreation depends on motor vehicles. These may be conventional cars, four-wheel-drive vehicles, or motor cycles.

They may be used for touring and sightseeing, as a means of obtaining access to a particular area where other forms of recreation will be undertaken, or—when they are driven in competitive rallies or in adverse but challenging road conditions—as a source of recreation in themselves.

Most visitors to the area use conventional two-wheel-drive vehicles and keep to the major through routes. Others use four-wheel-drive vehicles or motor-cycles to gain access to the more isolated areas via the secondary system of roads that supplement the major ones. This system was constructed mainly for timber harvesting, forest management, and fire protection. The roads are frequently rough and sometimes steep and have not been designed to cope with increasing use by recreation vehicles.

Consequently, even legal use of roads can pose maintenance problems for the land manager. Authorities responsible for their construction and maintenance on public land may close roads temporarily or permanently when traffic exceeds their physical capacity, for safety reasons, or when use by vehicles is in unacceptable conflict with the area's primary uses. Erosion hazard areas may be proclaimed according to the provisions of the *Land Conservation (Vehicle Control) Act 1972* and regulations, enabling strict control to be enforced.

If the increased recreational use of roads is to be catered for, adequate funding should be provided for road maintenance, otherwise deterioration leading to erosion is inevitable.

A number of four-wheel-drive clubs have acknowledged the need for restrictions on motorized recreation in certain areas and during some periods of the year, and generally support the use of existing legislation to control undesirable activities. Clubs also recognize the need to inform and educate participants in motorized recreation of the environmental consequences of improper use of four-wheel-drive vehicles. Authorities with management responsibilities should continue to promote responsible attitudes to the use of four-wheel-drive vehicles and trail-bikes.

A significant and growing proportion of the population is becoming involved in recreational touring, which depends on the use of roads on public land. Drivers of motor vehicles, including motor-cycles, who leave the roads on public land contravene the provisions of the above *Act*. (Limited exceptions are given in the *Act*.)

The demand exists for the provision of some areas of public land to accommodate and relocate the off-road activities of motor vehicles, particularly trail-bikes. Such areas could, for example, take the form of defined trails in some State forests or could include disused quarries or parts of some recreation reserves close to urban centres. Where possible, the alternative use of suitable private land should be considered. Areas chosen, whether public land or freehold, would have to be in situations where damage to soil and vegetation would be minimal, and where noise would not cause undue disturbance to other people using, or living in, nearby areas. Council points out that there is a serious and growing problem of damage to soils and vegetation by spectators attracted to these activities.

Hunting

The wetlands of Lakes Corringale and Curlip and Ewing Marsh are visited by hunters during the proclaimed Victorian duck-hunting season. Wetlands associated with Sydenham Inlet are also considered to have good potential for duck-hunting, while local hunters use the river flats at Genoa and Wangarabell and parts of the Betka River catchment.

Potential in the study area for deer-hunting is likely to increase. Hog deer occur in small groups along the coast from Lake Tyers to near Mallacoota. At present most hunters concentrate on the major hog deer populations further west around the Gippsland Lakes, but this may change if the East Gippsland populations increase in size. Hog deer can only be hunted during one month of the year (April) and then only by stalking using bows or rifles of a specific calibre. The use of hounds is prohibited.

Sambar deer are known to occur in the Orbost district and colonization is continuing. It is likely that breeding populations will increase. East Gippsland therefore offers potential for hunting but at this stage is not heavily exploited.

The two methods of hunting Sambar deer are stalking using either guns or bows, and trailing using hounds. Under the *Wildlife (Game) Regulations* 1976, No. 2, hunting of Sambar is permitted year-round.

For the large areas of public land now proposed to become State forest, no restrictions on deer-hunting are proposed by the Council, other than existing legal requirements. Hunting is not permitted, however, in parks and other reserves where flora and fauna are specifically protected.

Youth camps

Currently the study area contains few permanent youth camp sites. Demand is likely to increase, however, for sites for use by scouts, schools, church groups, and the like. Users have generally preferred sites situated in pleasant bushland, close to a permanent stream, readily accessible by road, and in areas where the safety of the camp and its occupants can be ensured during periods of high fire danger. Such sites are relatively scarce and their use for youth camps is in direct competition with their use for less-restrictive public activities, such as picnicking and general camping.

Camps on public land vary greatly—in the purpose for which they are constructed, in their standards of maintenance, and in the degree to which they are used. Some are designed to provide full accommodation, with campers living in huts that have electricity and hot water provided; others have only minimal facilities, with campers living in tents. Some have considerable amounts of money and volunteers' time and effort put into their construction and maintenance; others have been built and are maintained at very low standards. Some are used for much of the year, with the owner organization allowing use by other groups. Others are used only occasionally and exclusively by one group.

User groups have an increasing tendency to acquire freehold land for their actual camp site, while using adjacent public land for their outdoor activities, and Council believes that this trend should be encouraged. While recognizing that a variety of types of camps may be needed, Council believes that any camps permitted on public land should be properly located, constructed, and maintained. For efficient management of camps, it may be

necessary for a single organization to be given limited tenure over a minimum area at any individual camp site, under the control of the land manager. Council believes, however, that these camps should still be used as fully as possible consistent with avoiding damage to the environment.

The greater use of existing camps on public land is desirable in order to avoid proliferation of camp sites, and there is a need for co-ordination of information regarding the availability of those camps that could be used by groups who do not have tenure of their own.

Fossicking or prospecting

Fossicking, or prospecting (prospecting as defined by the *Mines Act* 1958 means operations conducted in the course of exploring for minerals), is a popular recreational activity in parts of the study area. Most people are seeking gold, but there is also an interest in gemstones.

It is necessary to obtain a Miner's Right before prospecting for minerals (including gemstones) can be undertaken on public land.

Guidelines and recommendations relating to fossicking and prospecting are given in Chapter P, Mineral and Stone Production.

Recommendations

- L1 That public land continue to be available for a wide range of recreational uses where these can be accommodated without detriment to other values, and that land managing authorities aim at controlling the types, levels, and patterns of recreational use according to the capability of particular areas to sustain such use without irreversible change or significant conflict with the primary purpose of the area.
- L2 That vehicular use of roads within the meaning of the *Land Conservation (Vehicle Control) Regulations* 1973 continue to be permitted on public land except where closure is necessary because of erodible soils, seasonal conditions, excessive maintenance, or conflict with the primary use of the area.
- L3 That for the present, the area of land available for off-road vehicular use in the Parish of Newmerella (45 ha) be

State forest but, should public land be required in the region as a venue for off-road vehicles, this area be considered first.

- L4- That the areas indicated on Map A and
- L7 listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

L4 Existing recreation reserves

L5 Tonghi (100 ha)

L6 Cann River (1 ha)

L7 Cann River (8 ha)

Note:

Portion of the Marlo racecourse and recreation reserve may be required for garbage disposal purposes (see Recommendation Q 11).

Coast road proposal

Representations for a coastal road in the East Gippsland area originated in the 1930s. In 1943 the Department of Crown Lands and Survey made provision for a coastal road by reserving from occupation a 30-chain strip of Crown land along the coast between Marlo and Mallacoota.

In 1964 the Council of the Shire of Orbost raised the question with the Tourist Development Authority. An inspection was made of the area by Councillors, Members of Parliament, and representatives of the then Country Roads Board with a view to constructing some 120 km of road between Mallacoota and Marlo.

During 1965, when the Roads (Special Project) Fund was introduced, it was announced that monies would be allocated in the 1966-67 financial year for the construction of the stage between Mallacoota and Wingan Inlet. This was later amended to 1970/71 and programmed for construction over the following three years; but funds were not allocated.

Construction of the Marlo-Cape Conran Road was commenced in 1966 and completed in 1969. This links with the Princes Highway—at Orbost via Marlo, and near Cabbage Tree Creek from the Cape Conran end.

In 1973, the Shire Council proposed two 'loop roads' as an alternative to the original plan.

One loop from Mallacoota, along the coast to Wingan Inlet, then upstream to the Princess Highway; the other linking Cape Conran to Bemm River. The latter loop proposal has again been put forward by the Shire during consideration of the Corringlie-Bemm River Strategy Plan. The Shire Council suggested that an all-weather road be constructed, preferably along the alignment of the State Electricity Commission power line, with access to points along the coast.

The Shire Council expects that a coast road would encourage more tourist spending in the Shire as well as the development of "Village" subdivisions in the Marlo area, which would create more rateable property. It believes that the route would provide a scenic alternative to the Princess Highway away from heavy transports and through traffic, and that it would cost less than a collection of several branch roads from the highway to particular points on the coast.

Mallacoota, Wingan Inlet, Cape Everard, Tamboon Inlet, Bemm River, and Cape Conran, however, are now all accessible by branch roads from the Princes Highway. Other sites are accessible by forest tracks—including the Yeerung River (from Cape Conran) and Pearl Point (from Bemm River). Shipwreck Creek is also on a track that branches from a road looping back from the Mallacoota aerodrome to the Princes Highway. The Council would be opposed to the construction of a through road along the coast within the Croajingolong National Park.

The Old Coast Road links Bemm River with Cann River and is of two-wheel-drive standard. This route extends as a track of less than 20 km length to near Cape Conran—parallel to the coast, but some 5km inland. In addition, a service track for the State Electricity Commission powerline between Cape Conran and Bemm River links these centres via Pearl Point. This latter route is currently for use only by management vehicles.

Ideally, a coast road should provide the motorist with views of the coastline and to achieve this it should be routed as closely as possible to the shoreline. For much of the coast between Cape Conran and Bemm River such a road would need to be sited on unstable dunes to provide the views of the foreshore and ocean. To align the road behind the dunes would essentially

eliminate all but an occasional glimpse of the coastal scenery.

The plains between Cape Conran and Bemm River are important geomorphologically; the heathlands provide habitat for a number of significant faunal species, including the smoky mouse and ground parrot; and the catchment to Dock Inlet is the only essentially undisturbed example of a stream system feeding a land-locked lake on the coastal plains. Engineering works associated with the construction of a road as well as the road itself would be major intrusions in this relatively flat landscape and may hinder the movement of fauna.

The Old Coast Road passes through a number of environmentally sensitive areas including casuarina stands known to be used by the glossy black cockatoo (classified as a significant species) and heathlands containing the rare leafless tongue-orchid, a species considered vulnerable in Australia.

The track along the State Electricity Commission transmission line must be maintained, if only to service the line. It requires some upgrading now to avoid further damage to wet areas and the crossing of the stream feeding Dock Inlet. In addition, the access routes in the vicinity of Pearl Point should be controlled and further multiple-tracking prevented.

The Councils considers that roading proposals linking Bemm River and Cape Conran should be investigated by the Department of Conservation, Forests and Lands, the Ministry for Planning and Environment, the Victorian Tourist Commission, and the Shire of Orbost.

Recommendation

- L8** That an investigation be conducted to determine whether a tourist road adjacent to but outside the northern boundary of the proposed coastal park could be constructed to link Bemm River and Cape Conran without further compromising or degrading the significant conservation values of the coastal plains.

Tourism

The NIEIR study made the following comments about tourism in the study area.

There is some scope for the expansion of other sectors in the regional economy such as tourism, but, while employment associated with it is likely to increase, uncertainty remains about the extent of its contribution to the regional economy, particularly in the short term.

Tourism's contribution to employment opportunities will depend largely on the promotion of East Gippsland by both local and State governments and on the degree to which private developers are prepared to invest in tourism there. East Gippsland has many natural attributes (many of which are now proposed for inclusion in major national parks) that make it particularly attractive as a destination for a variety of recreational pursuits. These parks could provide significant employment opportunities, but their potential will need to be realized if tourism is to make a substantial contribution to employment levels and the regional economy. Stage One of the economic study estimated that tourism was the only growth sector in the regional economy (around 4 to 5% per annum), but it also concluded that this level of growth would be unlikely to continue unless adequate facilities and developments associated with national parks were provided.

The park proposals will serve to improve the general attractiveness of East Gippsland to tourists and should facilitate the co-ordinated development and promotion of the area. With the added attractions of extended park areas, and given promotion of the area, East Gippsland can be expected to at least maintain its share of intrastate tourism in the face of competition from areas favoured under the State Tourism Strategy, and may well increase this share. The proposals are expected to permit a continued general tourism growth rate of at least 4-5%.

Indeed, the park proposals would have an almost immediate impact on the numbers of tourism-related government jobs. The additional requirements for park management are expected to increase this employment component from about 25 to 35 full-time annual equivalent jobs by about 1991. This figure is a minimum and could be expected to rise with increasing intensity in the use of parks.

The principal impact on tourism industry employment, however, would occur in the

private sector, through expenditure by tourists. The broad projection using a conservative multiplier of 1.2 is for an increase in tourism industry employment in East Gippsland by 115-130 jobs by the year 2001.

Although the main incidence of tourism industry development in East Gippsland is likely to fall on the coastal areas, particularly Mallacoota and Marlo-Cape Conran, significant impacts would also be likely in Orbost and Cann River, the major centres on the Princes Highway.

The Council is not suggesting that the expansion of tourism will offset job losses in the timber industry completely, nor will it necessarily provide alternative employment for timber workers, as shown in the NIEIR study.

However, Council believes that the outstanding attributes now within the proposed inland parks will make an important contribution to the expansion of tourism in the area, by providing an alternative recreation focus.

The government recently announced several major initiatives that will substantially boost the tourism potential of East Gippsland, including that of the inland parks. Several of these initiatives will be funded jointly by the State and Commonwealth governments through the National Rainforest Conservation Program.

A tourism strategy is to be developed for East Gippsland. This will be a joint venture by the Department of Conservation, Forests and Lands and the Victorian Tourism Commission and will complement the South Coast Region Tourism Strategy Plan currently being prepared. The Department will also establish visitor information centres at Orbost and Mallacoota, as well as interpretative facilities associated with rainforest in the Errinundra National Park and in the Bemm River Scenic Reserve.

As part of its active promotion of tourism in the region, the Department will prepare a new brochure outlining the major attributes of East Gippsland and will also distribute detailed information to tourist entrepreneurs. Tourism associated with rainforest will receive particular emphasis, with funding provided by both Commonwealth and State governments. This will enable interpretative facilities at Errinundra and Bemm River to be established,

including the development of picnic areas, camping sites, walking tracks, and visitor information boards. A program of road improvements on major access routes to the various parks is also proposed. All of these proposals are in addition, to the development at Cape Conran.

The government is therefore committed to the promotion and development of East Gippsland as a significant tourist destination area and this will have a major influence on the capability of the inland parks to attract visitors and thereby provide an alternative focus for tourism, which offers quite different but equally outstanding opportunities for recreation away from the coast.

Tourism and Mallacoota Inlet

Mallacoota township has a population of 600 people. The Mallacoota Chamber of Commerce estimates the value of investment there at \$10m, and annual income as some \$15m. The town depends largely on the 9000 tourists who enjoy recreational facilities in Mallacoota in holiday periods. The tourist potential of the area in turn depends chiefly on the natural environments—namely, the Inlet, the sea, beaches, and surrounding forest. Thus, the way in which public land is reserved and used has a significant influence on the socio-economic structure of Mallacoota. Most of the public land around the inlet is included in the Croajingolong National Park, which, while this is a major recreational focus, places certain limitations on the types of activities and developments that can take place within it.

The Council has identified an area of State forest to the west of the township that could be used for a variety of purposes, if required, but any such use should be in accordance with approved planning strategies for Mallacoota.

The Mallacoota area also has a well-known and well-deserved reputation as a major recreational fishing centre. However, concern has been expressed recently about the decline (perceived or actual) in the numbers of fish caught in the Inlet. Views differ about the nature and extent of the decline, and various proposals have been suggested to alleviate the problem. These include the introduction of a closed season during the bream spawning period, a reduction in the number of professional fishermen working in the Inlet (or a complete prohibition

of professional fishing), the introduction of a bag limit, and the closure of the Inlet for at least 1 year to allow fish stocks to recover.

Responding to the concern, the Department of Conservation, Forests and Lands carried out a survey of recreational fishing in Mallacoota Inlet. While the survey acknowledged a decline in the angling catch during the period of the survey (1982-84), the Department concluded that:

'It is not possible to determine whether the lower productivity of bream in Mallacoota Inlet is a natural phenomenon or has resulted from alterations in the aquatic environment brought about by human activities.'

Recreational fishing has long been one of the attractions of Mallacoota and it is believed that any decline in this valuable asset could have an adverse effect on the tourism industry, which would in turn have an impact on the economy of the township and subsequently the region.

As the bed and banks of Mallacoota Inlet, as well as most of the catchments to it, are public land, land use in these areas should be compatible with the maintenance of water quality and aquatic values in the Inlet. For this reason, vegetation disturbance should be kept to a minimum, particularly in areas adjacent to the Genoa and Wallagaraugh Rivers.

The Council also notes that considerable pulpwood-harvesting is taking place on freehold land within the Mallacoota Inlet catchments and this is likely to be affecting water quality and sediment loads.

It is also important that further research be undertaken to identify ways in which further habitat degradation can be prevented and measures taken to improve environmental characteristics to improve fishing resources.

Proposals to establish a permanent entrance from the sea to Mallacoota Inlet have also been put forward, primarily to provide safer boating conditions on the sand bar at the entrance. A number of options, including the construction of training walls, have been considered, but the cost of construction and maintenance would seem to be high, although no comprehensive investigation of the benefits and costs has been undertaken. Such proposals also raise environmental concerns in that a larger permanent entrance could affect tidal patterns and salinity regimes, and may lead to problems in maintaining shoreline stability.

The Council recognizes that, while the establishment of a permanent entrance would provide safer access to and from the Inlet for both commercial and recreational fishing, the environmental concerns and the high cost of constructing and maintaining the entrance must be weighed up against the benefits. It may be more appropriate and less costly from financial and environmental points of view to upgrade the existing boating facilities at Bastion Point as an alternative.

Recommendations

- L9** That further research be undertaken to identify the extent of habitat degradation of Mallacoota Inlet and its catchment and that appropriate measures be taken to minimize or eliminate further deterioration.
- L10** That further studies be undertaken to identify the causes of the decline in fish catches in the Inlet and that appropriate action be taken to rectify this situation.
- L11** That the establishment of a permanent entrance to Mallacoota Inlet not be permitted.

M. Scenic reserves

These are set aside to preserve scenic features and lookouts of particular significance.

Aims of management of these areas should be to maintain the character and quality of the landscape and to maintain native vegetation.

Existing scenic reserves

Recommendations

- M1-** That the areas listed below and shown on Map A continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

and

that timber harvesting not be permitted.

Note:

The scenic reserve at Mount Ellery is now recommended as part of the Errinundra National Park; and Arte River is now recommended as a flora reserve (See Recommendation F9).

M1 The Gap (430 ha)

M2 Mount Delegate (300 ha)

M3 Bemm River (635 ha)

Note:

This area has been enlarged slightly to incorporate the previously recommended McKenzie River Highway Park. The Council considers that off-road parking, picnic sites, and walking tracks should be established in the scenic reserve to provide public access to the fine example of lowland rainforest adjacent to the Princes Highway. However, the siting of any recreational facilities should be carefully planned so that the population of the rare sun orchid (*Thelymitra relecta*) is protected.

M4 Martins Creek (200 ha)

Notes:

1 This reserve, along with others in the study area, will be considered in the Council's investigation of rainforest in Victoria to determine whether its reservation as a scenic reserve is appropriate.

2. Future upgrading and roadworks on the Bonang Highway adjacent to this reserve should not diminish the values of the reserve.

N. Historic reserves

In East Gippsland, relics associated with the history of the area occur on many sites on both public and private land. Aspects or themes of Australian history found include sites and relics related to early exploration, pastoral development, mining, transport and education and to the development of secondary industries and services.

The discovery of gold in eastern Victoria had considerable influence on development there. The study area contains a large number of gold-mining sites that provide examples of different mining techniques, ranging from small alluvial hand workings to large reef mines. The relics of the settlements and developments associated with the goldfields also provide information on the social environment of that period.

There is considerable interest in the community about the State's history. This interest is likely to increase, particularly as more becomes known about historical relics located on public land. Council considers that sites of historical interest should be protected as far as possible from progressive deterioration due to exposure to the weather and from damage by the public.

Council conducted a study to identify the major historical themes representative of past uses of the sites and areas of greatest historical significance. Where sites were identified that are not currently protected by reservation or mentioned in the following recommendations, their location has been drawn to the attention of the land managers, for appropriate protection by prescriptions and in management plans.

Council believes that several of the mining sites should be reserved to protect the artefacts within them.

Management of historic reserves

The recommended historic reserves include portions of the major goldfields of the region. Council recognizes that there is interest in the exploration and possible mining of these goldfields. Council believes that such activities should be permitted in historic reserves, as specified in the recommendations below, and that a balance should be achieved between these activities and the protection of historical relics. Areas to be excluded from exploration and

mining should be agreed upon jointly by the Department of Industry, Technology and Resources and the land manager.

The management of historic reserves should take into account the need for public safety in the vicinity of old mines and other relics. The Department of Industry, Technology and Resources has a statutory function with respect to the safety of mines, and nothing in these recommendations affects the powers of Inspectors of Mines as defined under the *Mines Act 1958* and *Extractive Industries Act 1966*.

Recommendations

- N1- That the areas listed below be used to:
- N3
- (a) protect specific sites that carry or contain the relics of buildings, equipment, construction works, and artefacts associated with the history of the locality
 - (b) provide opportunities for recreation and education associated with the history of the locality (development of recreational facilities would be minimal)
- that
- (c) use of these areas be such as to ensure the safety of visitors (in matters of public safety nothing in these recommendations affects the powers of Inspectors under the *Mines Act 1958* and the *Extractive Industries Act 1966*; it is understood that in exercising these powers the land manager would be consulted)
 - (d) exploration for and the extraction of minerals—including prospecting under a Miner's Right and fossicking—be permitted in accordance with Recommendations P1-P4 and the principles and guidelines contained in the chapter on Mineral and Stone Production.
 - (e) removal and treatment of material from mine dumps only be permitted in areas agreed to by the Department of Industry, Technology and Resources and the land manager (safety, the availability of material from alternative sources,

and the historical importance of the dump should be taken into account)

- (f) honey production be permitted
- (g) grazing be permitted at the discretion of the land manager

and that the areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Conservation, Forests and Lands.

N1 Bonanza Gully (5 ha)

This reef gold-mine operated at about the turn of the century and the site now contains three mullock heaps, a timbered tunnel, an infilled shaft, and remnants of a chimney and small furnace.

N2 Victoria Star Mine (35 ha)

Dating from 1911, this mine worked the highest-yielding reef in East Gippsland. Relics at the site include mullock heaps, crusher, remains of a boiler, and puddling tanks.

N3 Golden Gully Machinery Site (60 ha)

This site contains a re-built water-wheel powered by water from a race fed by a nearby dam, which drives a six-head battery. Although a reconstruction, the site has educational value, representing the traditional methods of mining in the region.

O. Agriculture

In the previous (1977) recommendations, Council made available large parcels of land close to established agricultural centres so that people farming remote and isolated blocks could have the opportunity to exchange the land and move to areas that could be serviced more efficiently by the Shire. No application for land exchange for this purpose has been received since the recommendations were published. However, very little scope remains for the expansion of agriculture in the area and Council believes that some public land should be available in the future for possible development should the need arise. It may be more appropriate in some instances to make some of these areas available under lease, rather than by alienation. Discussion regarding these areas at Waygara and Cann River is now included in Chapter E (State Forest and Timber Production).

Other areas for agricultural development proposed by the Council and shown on the map are those for which applications have been made, which would rationalize public land-freehold boundaries, or which would constitute small additions to existing properties. Some of the applications were first made more than 20 years ago. The Council believes the areas have the potential to improve the viability of adjoining properties and that they should be made available provided conditions can be imposed to ensure that limited areas of blocks that are steep or rocky remain uncleared. The Council is aware that under existing legislation, difficulties have been experienced in applying conditions, and this should be investigated in the new legislation being prepared by the Department of Conservation, Forests and Lands.

It should be noted that all of the land included in Recommendations 01-012 was approved by the government for alienation in 1979 and a number of applications were received as a consequence.

The Tostaree Pilot farm (Recommendation N4 in 1977) was set aside for research into the agricultural development of the relatively infertile coastal plains. This research has been completed and the area previously set aside is now included in State forest.

Recommendations

- 01- 012 That the areas shown on Map A and described in Schedule 1 below be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Note:

In some instances it may be necessary to impose conditions preventing clearing on limited areas of unsuitable land.

Schedule 1: Land for agriculture

- 01 60 ha, being allotment 5C of section A, Parish of Bidwell
- 02 240 ha north of allotments 5, 6, 7 and 8 of section A, Parish of Maramingo
- 03 94 ha north of allotment 47B of section A, Parish of Orbost
- 04 3-6 ha adjacent to allotment 8E of section C, Parish of Newmerella
- 05 16 ha north of allotment 15 of section B, Parish of Newmerella
- 06 47 ha, being allotments 24 and 24L, Parish of Noorinbee
- 07 90 ha east of allotments 31 and 31A, Parish of Noorinbee
- 08 4-1 ha, being part of allotment 7B, Parish of Nowa Nowa South
- 09 44 ha, being allotment 2C of section A, Parish of Tildesley East
- 010 80 ha, being allotment 33, Parish of Tildesley West
- 011 15 ha, being allotment 41H, Parish of Tildesley West
- 012 100 ha east of allotment 29C, Parish of Tonghi

Additional areas for agriculture

During its review of public land use in East Gippsland, the Council received a number of requests for alienation of land for agriculture. The areas listed in Schedule 2 below are recommended for this purpose.

Recommendations

- O13-** That the areas shown on Map A and
O17 described in Schedule 2 below be used
for agriculture in accordance with the
provisions of section 5 (3) of the *Land
Conservation Act 1970* and the *Land Act
1958*.

Note:

In some instances it may be necessary to impose
conditions preventing clearing on limited areas
of unsuitable land.

Schedule 2: Additional land for agriculture

- O13** 28 ha, being part of allotment 8, section
A, Parish of Bonang
O14 61 ha, being allotment 13B, section A,
Parish of Maramingo

- O15** 80 ha, being allotment 34A, section A,
Parish of Noorinbee

- O16** 270 ha west of allotment 14, section A,
Parish of Waygara

- O17** 80 ha, being east of allotment 6D, section
A, Parish of Noorinbee

Note:

In the case of Recommendations O15-O17,
the Council is aware that these areas occur on
either the Waygara or Wooyoot Land Systems
and, as such, may be susceptible to salting
problems arising from extensive clearing. The
Council believes that this problem should be
investigated and the decision to alienate these
areas should be dependent on the outcome of
the investigation.

P. Mineral and stone production

The continued existence of our technological society will depend on the availability of minerals. The study area contains known deposits of 'minerals' as defined in the *Mines Act* 1958. Nevertheless, knowledge of the location of our mineral resources is far from complete and new deposits of commercial significance will undoubtedly be found. Furthermore, currently uneconomic deposits of important minerals may become economically exploitable, and other minerals that are not used at present may become important.

Exploration for minerals

The government has the responsibility to establish the existence and extent of the State's mineral resources. The government, in the main meets this responsibility through the provisions in the *Mines Act* 1958 that provide the tenure under which private enterprise is encouraged at its own cost to locate new mineral deposits. When a new deposit is discovered in an area where mining is not a currently approved land use, it may be of such importance that a change of the land use is required in the State's interest. The decision on whether such a change is in fact necessary can only be made against a background of the best available knowledge of the location and extent of the particular mineral deposit. It is important therefore that the reservation of conservation areas should not automatically exclude exploration for mineral and fossil fuel resources. Attention should be directed towards ensuring that other values and interests are protected, rather than preventing exploration activities.

The protection of other values—particularly those historical values around old mine sites—should never be enforced to the point that it places human life at risk. In relation to public safety, nothing in the recommendations affects the powers of Inspectors under the *Mines Act* 1958 and the *Extractive Industries Act* 1966.

Gold

Increases in the price of gold have resulted in an upturn in mineral exploration and mining in recent years. This trend has been particularly

strong in 1986 which has seen a marked demand for Miner's Rights, Miner's Right Claims, Exploration Licences, Mining Leases, Tailings Removal Licences and Tailing Treatment Licences. Known goldfields have been the focus of most activity and several former mines have been re-opened. Those involved range from the part-time hobby prospector to large mining companies, but in numerical terms, it is the former group which has experienced the most substantial growth. To a large extent, this is due to the ready availability of modern, low-cost, technology in the form of metal detectors and eductor dredges which have enhanced the prospects of small operators.

Fossicking and prospecting

Fossicking and prospecting are often taken to mean one and the same thing. In mining terms a fossicker is a person who casually works over old mine workings and waste rock heaps in the hope of finding small amounts of gold or other minerals. Unlike prospecting, the term 'fossicking' has no basis in legislation under the *Mines Act* 1958. Fossicking is also accepted as a wider term that embraces not only the search for gold and minerals, but also for other items such as bottles or coins.

Prospecting is a systematic activity, defined in the *Mines Act* 1958 as 'all operations conducted for the purpose of discovering or establishing the presence or extent of mineralization of a mineral'. It is necessary to hold an exploration licence, or a Miner's Right, before prospecting may be undertaken. Most individual miners and prospectors operate under a Miner's Right, which does not permit prospecting on private land.

Under current legislation there is a small percentage of public land in the State where prospecting under a Miner's Right is not permitted. This includes areas used for various community purposes such as golf courses, cemeteries, and flora reserves.

Council considers fossicking and prospecting to be legitimate uses of public land and as such should not be unduly restricted or regulated. There are some areas, however, where these activities may not be permitted or may require

limitation and these have been specifically nominated in the recommendations (see Chapter B—Reference Areas and Chapter D—Water Production).

In addition to these, there may be other limited areas of land surface that, because of their special public importance or inherent instability, warrant either permanent or temporary exclusion from fossicking and prospecting. These areas may include, for example:

- land that, if disturbed, may detrimentally affect water quality, especially where the water is used for domestic consumption
- important habitats for plant species or fauna
- important historic relics that could be damaged
- sites of high erosion hazard
- community assets such as recreation areas and water or sewerage installations
- important geological formations.

These limited areas of land surface have not been specified in the recommendations, but will be determined by the land manager and the Department of Industry, Technology and Resources together. Fossicking and prospecting, where they involve minimal disturbance to soil or vegetation, will be permitted on public land other than these limited areas and those specifically nominated in the recommendations. Areas currently exempted or excepted under existing legislation should remain so, unless otherwise specified in these recommendations or unless the land manager and the Department of Industry, Technology and Resources together determine that such exemptions or exceptions should no longer apply.

Stone

Materials covered by the definition of 'stone' in the *Extractive Industries Act 1966* (including rock, gravel, clay, sand, and soil) are widespread in the State. There is a strong community demand for new and better roads and buildings, and so for the materials necessary for their construction. Most of these materials are provided from private land, but public land is also an important source—particularly for road-making material.

The Council is concerned by the complexity of legislation and procedures governing extraction of 'stone'. (For example, the Road Construction Authority and municipal councils are not bound by many provisions of the *Extractive Industries Act 1966*.)

There is need for:

- review of existing legislation and procedures to enable more rational use of the 'stone' resource of the State
- provision of adequate resources for the reclamation of old extraction sites on public land.

Poorly planned and located excavations can affect surrounding lands through noise, dust, unsightliness, and erosion and can diminish the value of the land. With care, however, these effects can be avoided or minimized.

Principles and guidelines

The terms "exploration and extraction", referred to below, do not relate to the activities described above as prospecting under a Miner's Right and fossicking.

The Council believes that the following principles should apply.

1. Some areas of land surface—because of their inherent instability or special public significance (for example, community assets or areas with important scenic, archaeological, historical, recreation, or nature conservation values)—warrant permanent or temporary exclusion from exploration and/or extraction of 'minerals'. The Department of Industry, Technology and Resources and the land manager should together determine these areas. Consultations take place as required between officers of the Department of Industry, Technology and Resources and the Department of Conservation, Forests and Lands to determine those areas that should be excluded and the conditions under which particular areas of public land are used for exploration for, and production of, minerals and stone.
2. When tenure is issued for operations under the *Mines Act 1958* on public land, the land manager should be consulted regarding the conditions to apply and

the supervision should be in accordance with the agreed conditions as specified in the claim, licence, or lease and with the requirements of the *Act*.

3. Consultation should continue between the land manager, the Department of Industry, Technology and Resources, the Department of Conservation, Forests and Lands, and the other relevant authorities with respect to the procedures to be adopted for the exploration and extraction of 'stone' on public land. Any operations on public land should continue to be subject to the approval of the land manager.

In all cases, the procedures that are established should apply to municipal councils, the Road Construction Authority, and other public authorities as well as to commercial operators. To ensure this, the relevant *Acts* may have to be amended.

A system should be established that would ensure, before work commences, the availability of funds for progressive and final reclamation of any excavation or operation. Provision should also be made to enable the acceleration of the rehabilitation of all existing extraction areas on public land.

5. Royalties for materials extracted from public land, including site rental when appropriate, must be more closely related to the market value of the material. This would eliminate any temptation to use public land purely on the grounds of the nominal royalties sometimes levied in the past.
6. The following guidelines should apply to all extraction from public land:
 - (a) The Department of Industry, Technology and Resources should not issue leases for petroleum production or for the mining of 'minerals' unless satisfied with the program submitted by the applicant. In the case of Miner's Right claims, prior assessment is impractical and the Department should ensure the lodgement of a bond as surety is adequate for rehabilitation. Wherever practical, the Department should seek the

lodgement of mining plans that show the expected post-mining state of the land and should state operating conditions to achieve an appropriate standard of rehabilitation acceptable to the land manager.

- (b) No sites for the extraction of 'stone' should be opened in areas that the land manager, in consultation with the Department of Industry, Technology and Resources, considers to be of greater value for other uses including aesthetic or nature conservation values. The advice of the Department should also be sought as to the desirability of proposed excavations, having regard to alternative sources of 'stone'.
- (c) Extraction of 'stone' should generally be concentrated on the fewest possible sites in an area, and any one site should be substantially worked out and where possible reclamation ensured before a new site is exploited. The type of excavation to be carried out should be that with the lowest environmental impact consistent with the effective use of the resource. In general, and where the nature of the resource permits, excavations for 'stone' should be deep and limited in area in preference to shallow excavations over a wide area. The extraction of granite sand occurring as shallow deposits in the weathered profile should be discouraged unless it has been established that no suitable alternatives are available. In the special circumstances where approval is given for this form of extraction, particular attention should be given to the prevention of soil erosion.
- (d) Where an application for the removal of 'stone' from a stream-bed is considered, the land manager should take particular care to ensure that the operations will not directly or indirectly cause erosion of the bed or banks, or undue pollution of the stream. In addition

to the arrangements outlined above for 'stone', the land manager should also consult with the relevant water supply and conservation authorities, and should consider the scenic and recreation values of the area.

Alternative sources with a lower environmental impact should be used where they are available. The environmental effect of extraction may be reduced if alluvial stone is obtained from properly managed quarries on the river terraces, rather than from the present stream-bed.

- (e) All extraction sites should be fully reclaimed where possible. Reclamation should follow extraction progressively when possible, but otherwise should begin immediately extraction is completed. The requirements for reclamation should continue to be included in the conditions of the lease or licence before any approval to extract is granted. The reclamation may include, for example, replacing topsoil, revegetating the site with plantation forest, allowing a quarry to fill with water and developing the site as a park, using a gravel pit for off-road vehicles, using a quarry for garbage disposal prior to reclamation, or restoring the site as closely as possible to its original topography and revegetating it with species native to the site.

In addition to the above, approval under the *Soil Conservation and Land Utilization Act 1958* should continue to be sought for the exploration or extraction operations for 'minerals', 'petroleum', or 'stone', where the subject land is within a proclaimed water supply catchment.

Recommendations

- P1 That prospecting under Miner's Right and fossicking, involving minimal disturbance of soil or vegetation, be permitted on public land other than:
 - (i) those areas specifically excluded in the recommendations (see the chapters on reference areas and water production)

- (ii) those areas that the land manager and the Department of Industry, Technology and Resources together may determine (see the guidelines in the section on fossicking and prospecting)
- (iii) the areas referred to in P2 below.

- P2 That those areas of public land currently exempted or excepted from occupation for mining purposes under a Miner's right or from being leased under a mining lease, remain so excepted or exempted unless the land manager and the Department of Industry, Technology and Resources together determine that such exemption or exception should no longer apply.
- P3 That public land in the study area (other than reference areas and other areas as determined by the government) continue to be available for exploration under licence and for extraction of 'minerals', 'petroleum' and groundwater, subject to Recommendation P2 and the principles and guidelines set out above.

Note:

This recommendation does not refer to prospecting under a Miner's Right, which is covered by Recommendation P1, but does include claims registered under a Miner's Right.

- P4 That public land in the study area (other than reference areas and other areas as determined by the government) continue to be available for exploration for 'stone' subject to the principles and guidelines set out above.

Existing stone reserves

Recommendations

- P5-11 That the areas listed in the schedule below and shown on Map A, be used for the extraction of 'stone' in accordance with the principles and guidelines outlined above and, if not already reserved for this purpose, be temporarily reserved under section 4 of the *Crown Land (Reserves) Act 1978*, with management plans prepared by the Department of Conservation, Forests and Lands. (These areas are additional

to sites on larger blocks of public land where gravel is one of the recommended uses.)

Schedule of stone reserves

- P5** 39.3 ha, being allotment 23G of Section C, Parish of Newmerella
- P6** 3 ha south of allotment 3 of Section A, Parish of Bemm

- P7** 1.1 ha within allotment 19L of Section B, Parish of Orbost East
- P8** 3.5 ha within allotment 19G of Section B, Parish of Orbost East
- P9** 1 ha within allotment 18 of Section A, Parish of Waygara
- P10** 1.1 ha south of allotment 18D, no section, Parish of Bete Bolong South
- P11** 0.8 ha within allotment 20 of Section A, Parish of Tildesley East

Q. Utilities and survey

Many utilities occupy public land. They include roads, pipelines, power lines, hospitals, churches, cemeteries, public halls, shire offices and depots, garbage depots, sanitary depots, and sewage-treatment works. These recommendations do not specifically refer to many of the small areas used for the purposes listed above, as no change of use is proposed. It is intended that for such areas existing legal uses and tenure should continue.

In the absence of firm planning proposals, accompanied by the necessary detailed information, it is not possible for the Council to provide for future requirements of land for survey and utilities. The use of land for these purposes will be considered when the need arises.

Government agencies concerned with provision and installation of communications equipment, transmission lines, pumped storage sites, power stations, port facilities, pipelines, roads, etc. are requested to submit proposals involving occupation agreements or the setting aside of sites on public land to the appropriate land managers at an early planning stage. This would assist in achieving co-ordinated planning, and perhaps avoid the necessity for costly resurveys.

Existing utilities

Recommendations

- Q1- Q9** That the areas indicated on Map A and listed below continue to be used for those purposes approved by the government following publication of the final recommendations for the East Gippsland area in March 1977.

Note:

The Council believes that, when new facilities are being proposed or existing ones are to be upgraded, consideration should be given to their design and location in order to minimize the impact on other values.

- Q3** Sewerage treatment works—
Newmerella and Marlo
- Q4** Marlo aerodrome

Notes:

1. A stand of purple diuris, an orchid species becoming rare in Victoria due to habitat destruction, has been identified within this reserve, close to the runway. Council supports the local arrangement whereby, subject to the safety requirements of the airport, cutting of the grass in the vicinity of the group of orchids is timed to avoid the main growing, flowering, and seed-setting period for the species.

2. The southern portion of the existing reserve contains vegetated sand dunes and swales and is not required for aerodrome purposes. It is proposed that this portion be added to the adjoining coastal park (see Recommendation A 16).

Q5 Maramingo rubbish tip

- Q1,** Other sites and easements for utility,
Q2, survey, or navigation purposes.

**Q6-
Q9**

Note:

A number of sites and structures, such as cemeteries and road bridges, are of local historical interest and this should be taken into account when maintenance and other works are undertaken.

Garbage disposal—Marlo

At present, rubbish from the township and region of Marlo is deposited in a short, steep gully, on the Coastal Reserve, which flows directly into the estuary of the Snowy River. The potential environmental hazards of poisonous leachates entering the estuary from this tip, the conflict now with people using the adjacent beach and water, and the location of the tip beside the main tourist road to Cape Conran necessitate the early closure of the tip and rehabilitation of this site.

Increasing recreational use of the area and proposed residential developments require a waste-disposal method that will be effective in the long term.

Investigations of alternative methods of disposal should include those involving collection services or a transfer station—particularly as Orbost region is now serviced by a recycling

centre—as well as sanitary landfill methods on private or public land. The investigations should take into account the potential future use of any land used as a tipping site, and a proper evaluation of the relative economics of the alternative methods.

The Council is of the opinion that a collection service or transfer station should be instituted at Marlo. However, should investigation by the Department of Conservation, Forests and Lands, Ministry for Planning and Environment, and Orbst Shire determine that public land is required for a sanitary landfill rubbish tip, the Council has identified a site within the north-eastern section of the recreation reserve (L4) near Marlo that could be used for this purpose, subject to the conditions applicable to this form of waste disposal. Development of this site should ensure that effluent does not enter watercourses.

Council is aware that consideration is being given to an alternative site on the western side of the recreation reserve. Council believes this is inappropriate, as drainage from a tip in this area could affect the William Hunter Flora Reserve (F8), and any future development of the recreation reserve could well be compromised.

Council is also aware of proposals for residential subdivision to the east of the recreation reserve, but believes that if public land is to be used, then a tip towards the eastern side is the best option.

Construction of alternative access could reduce the affects of this site on subdivision proposals and any such proposals would of course be influenced by the planning strategy approved for the area.

Recommendations

Q10 That the existing rubbish tip at Marlo be closed by September 1987 and the area be rehabilitated.

Q11 That, should public land be required for a sanitary land-fill rubbish tip near Marlo, approximately 1 ha near the eastern margin of the Racecourse and Recreation Reserve, Parish of Orbst East, be temporarily reserved for this

purpose, subject to the approval of the appropriate authorities.

Mallacoota aerodrome

At the time of the 1977 recommendations for East Gippsland it was thought that the area set aside for the Mallacoota aerodrome was Commonwealth land and therefore not public land according to the *Land Conservation Act*.

Recent information, however, has shown the area to be public land, leased to the Commonwealth.

Recommendation

Q12 That the areas indicated on Map A continue to be used for aerodrome purposes and that these areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978*.

Note:

Portion of the area previously leased by the Commonwealth is now proposed for inclusion in the coastal reserve, The Croajingolong National Park, and adjoining State forest. It is also proposed that the national park boundary be relocated to exclude the cleared approach path to the aerodrome (see Recommendation A6).

Railway land

The Bairnsdale-Orbst railway was brought into operation in 1916. Timber-trestle bridges carry the line across Ironstone Creek and Hospital Creek within (and over Stony Creek just to the west of) the study area. These bridges are now of considerable historical interest because of the method of construction and the materials used. The Stony Creek bridge, said to be the largest timber-trestle bridge in the Southern Hemisphere, is considered to be of State-wide significance. The rail viaduct across the Snowy River floodplain, also of timber-trestle construction, is the longest in the State.

Recommendation

Q13 That, subject to safety requirements, the historic timber-trestle railway bridges and viaduct be protected and examined for possible inclusion on the government register of historic buildings.

R. Township land

Public land in townships is currently used for a wide range of purposes. The Council has not proposed any change of use for such public land where the present use is for schools, public halls, sports grounds, and the like. In some cases, however, Council has made specific recommendations for township land to be set aside as bushland reserves and recreation reserves; these recommendations are included in the appropriate sections. Other areas of public land in townships should remain as unreserved Crown land—to be used, if required, for township purposes in the future.

Recommendation

- R1** That public land in townships, other than those areas that have been specifically reserved, should remain as unreserved Crown land to meet future requirements.

Notes:

1. Council is aware that the Aboriginal community in Cann River has expressed interest in using public land in the town for the establishment of a commercial enterprise and a community centre. Several areas, including the Police Reserve and the Public Purposes Reserve between the Cann River and the Cann Valley Highway, could be suitable. The Council believes that this is an appropriate use of township land and considers that the proposal should be promptly investigated.

2. At the mapping scale used (1:250 000), it is generally not possible to define the boundaries of public land in townships accurately. Reference should be made to the appropriate township plan to determine the accurate boundaries and form of reservation for those townships where public land is not shown on the map or referred to in these recommendations.

S. Other reserves and public land

Some small areas of public land in the study area that are used for various purposes, such as water production, grazing, camping, public utilities, and so on, have not been specifically mentioned in these recommendations. Others (both reserved and unreserved) receive little active use at present, even though they may once have been reserved for some specific purpose.

The Council intends that existing legal uses and tenure of these small areas of public land should continue, and that those not currently used for any particular purposes be used in a way that will not preclude their commitment in the future to some specific public use.

Recommendations

S1 That, for small areas of public land not specifically mentioned in these recommendations, existing legal use and tenure continue.

and that

where the land is not reserved for a specific purpose at present, such areas be used in a way that will not preclude their reservation in the future for as-yet-unknown public purposes.

T. Commonwealth land at Point Hicks

The council is aware that the Federal and State Governments are currently involved in negotiations regarding the area of Commonwealth land at Point Hicks, and it is understood that this land will be acquired by the State. In that event, the Council believes that the use of this land should be compatible with the surrounding public land, which is all contained within the Croajingolong National Park.

The area is of great historical interest as it was the first sighting of the eastern Australian coast by Cook. It is also strategically located with respect to the Croajingolong Park, it is well accessed, and it has obvious potential for tourist development. These important features need to be taken into account when determining the way it is to be used in the future.

Appendix 1

Final Recommendations for Parks in the Previous East Gippsland Investigation

Park Recommendations

A1 Croajingolong National Park

That the area of 82,000 ha shown on Map 1 be used to:

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems

and that

- (c) as the park includes Tamboon Inlet and extends to low-water mark in Mallacoota Inlet, any commercial fishing (including oyster-farming) in Tamboon Inlet and between low-water mark and high-water mark in Mallacoota Inlet be subject to any special conditions agreed upon by the National Parks Service in consultation with the Division of Fisheries and Wildlife
- (d) sites of archaeological or historical significance be protected
- (e) car access be permitted to a number of points on the coast, including the Point Hicks area and Wingan Inlet
- (f) policy with regard to motor boats on Tamboon Inlet be determined by the National Parks Service (after consultation with the Shire of Orbost), which should be the responsible authority under the *Motor Boating Act 1961*
- (g) the National Parks Service should consult with the Fisheries and Wildlife Division concerning wildlife management
- (h) honey production be permitted subject to specified conditions
- (i) grazing be phased out

and that it be reserved under Section 14 of the *Land Act 1958* pending reservation under the *National Parks Act 1975*, and managed by the National Parks Service.

A2 Tingaringy National Park

That the land (17 000 ha) shown on Map 1 be used to:

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems

and that

low-intensity grazing of cattle be permitted in limited areas—subject to adequate protection of the park, the Kosciusko National Park in New South Wales, and the proposed Gattamurh Creek reference area

and that it be reserved under section 14 of the *Land Act 1958* pending reservation under the *National Parks Act 1975*, and managed by the National Parks Service.

A3 Snowy River National Park

That the area of 25 000 ha shown on Map 1 be used to:

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems

and that

- (c) the managing authority consult with the Fisheries and Wildlife Division concerning wildlife management within the park
- (d) grazing be phased out

and that it be reserved under section 14 of the *Land Act 1958* pending reservation under the *National Parks Act 1975*, and managed by the National Parks Service.

A4 Coopracambra State Park

That the land (13 000 ha) shown on Map 1 be used to:

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems
- (c) protect features of particular geological significance

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the National Parks Service.

A5 Lake Tyers State Park

That the land (2 000 ha) shown on Map 1 be used to:

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems

and that

- (c) features of historical interest be preserved
- (d) honey production be permitted subject to specified conditions

and that it be permanently reserved under section 14 of the *Lands Act* 1958, and managed by the Forests Commission.

A6 Mount Raymond Regional Park

That the land (800 ha) shown on the map be used to:

- (a) provide opportunities for informal recreation for large numbers of people
- (b) conserve and protect natural ecosystems to the extent that this is consistent with (a) above
- (c) provide sites for a fire tower and television translator

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Forests Commission.

Appendix 2

The NIEIR Economic/Employment Evaluation: Summary of Findings

7.1 Conclusions on timber industry employment

It is now possible to bring together the findings of the analyses in Chapters 2, 3 and 4 on future

direct employment in the timber industry in East Gippsland. This is done in Tables 7.1 (a) and (b). Table 7.1 (a) uses an assumed 3 per cent annual labour productivity growth rate and Table 7.1 (b) uses a 2 per cent growth rate.

Table 7.1 (a): East Gippsland timber employment projections (3 per cent productivity growth rate)

Option	1986	1991	1996	2001	2011
No more parks					
Sawlog only (current cutting rate)	580	498	428	367	0+ ⁽¹⁾
Sawlog only (sust.)	580	342	160	137	101
Integrated harvesting—sawlog/pulpwood from—					
normal sawlog areas	580	457	214	184	135
wider areas also	580	614	485	417	304
More parks					
Sawlog only (current cutting rate)	580	498	428	0	0
Sawlog only (sust.)	580	304	94	81	60
Integrated harvesting—sawlog/pulpwood from—					
normal sawlog areas	580	396	123	106	78
wider areas also	580	535	364	313	236

Source:
NIEIR Projections

Note:
(1) The “+” sign indicates possible residual employment (e.g. Government employees, sleeper and pole cutters) at a minor level.

Table 7.1 (a) shows 1986 employment of an estimated 580. Under the “no more parks” situation, the most pessimistic long-term scenario is for employment to fall to zero at about 2006, with harvesting of normal sawlogs continuing at about 320 000 m³ annually till that time. This approach sustains employment in the short term, with a virtual eradication of the industry (apart from minor residual employment, e.g. Government forestry) for perhaps 24 years from 2006, until regrowth resources become available.

If the LCC park proposals were to be implemented, the comparable approach of continuing sawlog throughput at 320 000 m³ annually would see resource exhaustion by about year 1999 to 2000 and 31 or so years of little or no industry (apart from the small “scavengers”). To all practical viewpoints this impact is of a secondary order of importance. The LCC park proposals bring the “crunch” period forward about 7 years from 2006 to 1999

and extend the period of inactivity by this seven year period. The real problem, so far as the industry in East Gippsland is concerned, however, is a shortage of resource, due to a prolonged period of past harvesting at unsustainable rates.

If the need to move to sustainable resource utilisation levels is accepted, the employment impact of the move will depend strongly on the phase-down strategy adopted. NIEIR considered several phase-down options, ranging from an immediate phase-down to sustainable yield through to a 10 year phase-down period. It was shown that, the shorter the phase-down period, the larger the initial employment losses. Social and economic disruptions will be greatest under the most rapid phase-downs. The longer phase-down periods mean:

- less job loss during the phase-down, with less social and economic disruption (e.g. more time for capital and labour to adjust to change); and,

- more opportunity for positive regional development initiatives to be implemented.

This is achieved at a cost of only slightly lower employment levels in later years under the longer phase-down options. NIEIR's preferred approach is for a 10 year phase-down period in normal sawlog operation. The results summarised in this section are based on NIEIR's preferred 10 year phase-down period.

Tables 7.1 (a) and (b) both show that East Gippsland will experience significant declines in timber employment under a "sawlog-only" regime. Under sawlog-only production and with no additional parks or reserves, employment levels are projected to fall from 580 in 1986 to about 160 in year 1996, at 3 per

cent productivity increase (Table 7.1 (a)), or 178 at 2 per cent productivity increase. At that time throughput at sustainable levels (after a 10 year phase-down) is projected to be at 120 000 m³ annually (320 000 m³ in recent years). By year 2011, employment numbers will be about 100 at 3 per cent (133 at 2 per cent), then falling below that level. The LCC proposals reduce sustainable yield under NIEIR's 10 year phase-down approach to about 70 000 m³ annually, with direct employment numbers reduced by about 60–70 jobs about 1996, compared to the "no more parks" situation. By year 2011, the LCC proposals would imply about 40 less jobs than the "no more parks" situation at 3 per cent productivity increase (or 56 at 2 per cent).

Table 7.1 (b): East Gippsland timber employment projections (2 per cent productivity growth rate)

Option	1986	1991	1996	2001	2011
No more parks					
Sawlog only (current cutting rate)	580	525	476	431	0+ ⁽¹⁾
Sawlog only (sust.)	580	361	178	162	133
Integrated harvesting—sawlog/pulpwood from—					
normal sawlog areas	580	481	237	216	177
wider areas also	580	645	533	483	396
More parks					
Sawlog only (current cutting rate)	580	525	476	0	0
Sawlog only (sust.)	580	320	104	94	77
Integrated harvesting—sawlog/pulpwood from—					
normal sawlog areas	580	416	135	122	100
wider areas also	580	560	396	358	294

Source:
NIEIR Projections

Note:
(1) See Note (i) to Table 7.1 (a).

It was shown in Chapter Two that the need to adjust to a situation of sustainable yield is easily the major reason for the projected timber employment decline. Increasing productivity levels are also a significant contributory factor. Over the period to 2001–2011, the LCC proposals typically account for about one-tenth, or slightly more, of projected employment declines under the sustainable sawlog only regime at a three per cent labour productivity growth rate, or a slightly higher proportion at a two per cent productivity growth rate.

Lowering the assumed rate of productivity increase from three per cent p.a. to two per cent p.a. increases projected regional employment levels by a modest amount and causes a rise in the projected job loss attributable

to the LCC proposals. Thus, for example, implied job loss due to the LCC proposals is about 68 in year 2001 at a 2 per cent productivity growth rate, compared to a loss of 56 jobs at 3 per cent productivity growth, for normal sawlog-only operation.

It was pointed out in Chapter Two that timber industry representatives are particularly concerned about the possible impact of the LCC proposals on the availability of larger dimensioned timbers from East Gippsland. Data inadequacies, however, preclude a detailed assessment of this matter at the present time. Collection of data relevant to this issue should be a priority for the near future, to enable a more complete evaluation of the LCC proposals.

Increasing the availability of timber, in the short, medium and longer term, is clearly a central way to improve the timber industry's prospects in East Gippsland. It has been suggested by some that the timber resource in existing parks and reserves is substantial and should be made available to relieve the current shortfall. The LCC Report (p. 44) notes that this would constitute an abandonment of long-standing Council and Government policy and be contrary to the basic concept of the use of national parks. Also as the resource based on sawlog-only operations in existing parks amounts to just over 2 years' cutting at current levels of harvesting, this approach would be of little practical assistance. Integrated harvesting thus provides the major way a larger resource base can become available.

Tables 7.1 (a) and (b) show that, if no more park proposals were implemented and full integrated harvesting were permitted, employment prospects in East Gippsland would improve considerably beyond those in a future of sawlog-only harvesting. In year 2001, for example, direct timber employment is projected at 417, having been over 600 (i.e. above existing levels) about year 1990, in the three per cent productivity growth situation. At a two per cent labour productivity growth rate, timber industry employment in 2001 under full integrated harvesting and no more parks is projected at about 483, or about 100 below existing levels.

Rising productivity levels become a more important reason for employment decline with integrated harvesting since the commercially viable resource base has been expanded considerably. Integrated harvesting from normal sawlog-only areas produces more jobs than the "sustained yield sawlog-only" approach, but is not nearly as effective as full integrated harvesting in job generation.

If a woodchip mill (100+ jobs) were to be established by the early 1990s, which would be

an economic possibility if a high level of pulpwood harvesting is permitted, it seems likely that direct timber industry employment could be maintained near current levels through to the late 1990s. The possibility of a pulp mill being added in the 1995-2000 period, with perhaps a paper making facility, is much more remote.

By 1995-2000 it also seems highly likely that some commercial applications of further processing (see Chapter 4) will be established in East Gippsland, adding perhaps 50 jobs and reinforcing the prospect for stable or slightly increasing timber industry employment to year 2000, if full integrated harvesting were to be implemented. The possible development of a woodchip mill should not be much affected by the LCC proposals, since projected sustainable pulpwood supply from East Gippsland stays above 600 000m³ with full integrated harvesting.

If the LCC park proposals were implemented and full integrated harvesting were permitted, direct timber industry employment in East Gippsland under NIEIR's preferred 10 year phasing period is projected at about 310 in year 2001 at 3 per cent productivity growth, about 230 above the number achievable with more parks and sawlog-only production. Employment associated with a woodchip mill and further processing would add 150+ jobs to this number. At a two per cent productivity growth rate, projected employment in year 2001 with the LCC park proposals, full integrated harvesting, a woodchip mill and further processing activities would be about 500+.

The LCC park proposals, in total, reduce potential timber industry job numbers of 417-483 at year 2001 (excluding the woodchip mill) by about 100-125, compared to a no more parks situation. This figure is comprised as follows:

	Productivity growth	
	3% p.a.	2% p.a.
"Loss" due to loss of some sawlogs from the normal sawlog resource	56	68
"Loss" due to loss of normal pulpwood	22	26
"Loss" due to loss of some integrated sawlog resource	14	17
"Loss" due to loss of some integrated pulpwood resource	12	14
Potential number of jobs lost	104	125

The losses attributable to the loss of normal sawlog resource (56–68 jobs) can be considered losses in the normal sense of the word. The remaining “losses” are really potential jobs foregone. They are not jobs that actually exist at the moment. That is, if full integrated harvesting is permitted, the LCC proposals would reduce the potential job gain from this source by up to 48–57 jobs. These two components together NIEIR calls the potential job loss.

Further processing of green hardwood timber is likely to add up to about 50 jobs in the timber industry in East Gippsland over the next 10–15 years, as noted above. If the LCC proposals are implemented, such processing will need to be based primarily on the mixed species resource, particularly the mountain mixed species. However, whether or not value added activities based on the mixed species develop in the event of the LCC proposals being implemented seems likely to have little, or nothing, to do with the LCC proposals per se. The mixed species resource exists in substantial quantities in East Gippsland. If it becomes commercially viable for some of this resource to be dried and processed (e.g. for veneer or window frames), this would help employment in the region. This can be done whether or not the LCC makes its current proposals. If the LCC proposals are not implemented, the shorter term prospects for further timber processing being added in East Gippsland may be improved, since the resource base is larger and includes more ash and shining gum, although local millers point out that the defect rate with this timber militates against its use for further processing. The overall effect of the LCC proposals seems likely to be to delay the introduction of further processing activities because of the need to research and develop markets and drying techniques for mixed species. NIEIR expects up to about 50 jobs in further processing activities in East Gippsland by 1995–2000.

7.2 Development of the East Gippsland timber industry

This Report has identified a number of initiatives which seem to be important in assisting future development of the timber industry in East Gippsland. These include:

- early work on the market potential for dried East Gippsland hardwoods;

- research into the most cost-effective means of drying East Gippsland hardwoods (which could involve assisting one or more firms to install experimental drying equipment);
- research into increased use of mountain and lowland mixed species for the larger dimensioned timber markets;
- research into the economic potential of thinning the East Gippsland regrowth resource and using these thinnings;
- training programs to improve sawing techniques and log selection.

If integrated harvesting is not permitted to a significant degree in East Gippsland, then adjustment assistance measures should also be made available. Assistance to firms to rationalize their operations may also be required in a scenario of decline.

It seems clear that a decision on integrated harvesting is the most important influence on the timber industry's employment prospects in East Gippsland. Integrated harvesting from normal sawlog-only areas would help industry employment but would not do nearly as much as full integrated harvesting because

- the resource involved is much smaller; and,
- the pulpwood quantities would not be sufficient to keep open the prospect of future development of a woodchip mill (and pulp/paper operation).

However, as harvesting operations need to be phased down in normal sawlog areas and would need to build-up in the integrated resource areas, it would be possible to:

- permit early integrated harvesting in normal sawlog areas, with the produce being sold perhaps to Eden, Maryvale or both; and, at the same time,
- carry out the necessary economic and environmental investigations into full integrated harvesting and woodchip plant establishment (including detailed economic studies into mill viability and location alternatives).

This should still make implementation of full integrated harvesting possible within 3–4 years, should the Government decide to proceed this way. It would also mean employment declines would be moderated during the next few years.

At the same time, the market and technical research tasks identified above could be implemented.

During the analysis of economic/environmental aspects of integrated harvesting and woodchip mill establishment, careful attention needs to be devoted to the possible wider costs and benefits of these activities, including such matters as impact on sawlog availability, balance of payments benefits, royalty setting procedures, as well as the range of environmental concerns (e.g. nutrient losses, effect on flora and fauna, etc.).

7.3 Impact on the East Gippsland tourism industry

In its 1985 Report for the LCC, NIEIR forecast that visitor numbers to East Gippsland would grow at an average annual rate of between four and five per cent, including higher growth rates of around seven and eight per cent per annum in the coastal resort areas (NIEIR, 1985). This forecast, however, was conditional on the development of further tourism facilities in East Gippsland, particularly in the coastal areas.

The LCC proposals for a Cape Conran-Sydenham Inlet Coastal Park, for development within that area, and for additional township land adjacent to coastal centres would allow maintenance of the high tourism growth rates in the coastal area. The proposals do not guarantee continued growth at these rates but make it possible for development to occur. In this respect, the extensions to township land and the proposed consideration of leasing public land for private development would play an important role.

The LCC proposals will also serve to increase the general attractiveness of East Gippsland to tourists and should facilitate the co-ordinated development and promotion of the area. With the added attractions of extended park areas and, given promotion of the area, East Gippsland can be expected to at least maintain its share of intrastate tourism in the face of competition from areas favoured under the State Tourism Strategy and may well increase this share. The LCC proposals are expected to permit a continued overall tourism growth rate of at least four or five per cent. This figure, however, could be exceeded as the proposed Errinundra N.P. and Snowy River N.P. extension could prove to be substantial

attractions (particularly if well promoted and with the improved access and facilities).

State forests also play an important role in tourism and CFL is currently considering further development of recreation facilities in these areas. These initiatives can contribute to a co-ordinated tourism program for the region. Development and promotion measures for tourism generally in East Gippsland need to reflect a co-ordinated approach if gains are to be maximized.

The LCC's park proposals would have an immediate impact on the numbers of tourism-related government jobs. The additional requirements for park management are expected to increase this employment component from around 25 to 35 FTAE jobs by about 1991. This figure is a minimum and could be expected to rise with increasing intensity in the use of parks. It also depends on the particular fire-control policy that is adopted.

The principal impact on tourism industry employment, however, would occur in the private sector through expenditure by tourists. Here, it is important to note that the main part of tourism expenditure in East Gippsland is associated with coastal tourism activities and, accordingly, growth rates in this area will have greater weight in affecting employment numbers. Consequently, employment is likely to increase at a rate somewhat between the rate of increase in visitors to the coastal areas and the rate for the area as a whole. Given a minimum overall annual growth rate of between four and five per cent and a likely annual growth rate in the coastal area of between seven and eight per cent, an employment growth rate of around six per cent per annum would be a reasonable proposition in the absence of productivity increase. Since there is more certainty attached to the visitor growth rate for the coastal areas than for other areas of East Gippsland, this figure has more certainty than the projection for overall visitors. Consideration of likely productivity increases (which tend to be 1 per cent or less in tourism) then leads to NIEIR's final tourism employment projection of five per cent growth rate over the next 10-15 years.

The impact of this growth rate on the number of tourism industry jobs in East Gippsland was set out in Table 5.3 which made projections to the year 2001. The overall projection is for an

increase in tourism industry employment in East Gippsland from between 125 and 135 FTAE jobs in 1986 to between 240 and 265 FTAE jobs by the year 2001. The LCC proposals are necessary to the achievement of this growth though they are not the only necessary element in its achievement (e.g. promotion, further subdivision, appropriate infrastructure works such as water supply and roads are also needed). Without the LCC proposals, employment growth potential of the tourism sector in East Gippsland would be expected to fall from about 5 per cent to perhaps 3 per cent annually, implying 60 less FTAE jobs in 2001.

A multiplier figure of 1.2, a conservative estimate, was used to estimate the overall employment increase in East Gippsland attributable to the projected growth in the tourism industry. The projection was given in Table 5.4 and shows an increase from 1986 to 2001 of around 130 FTAE jobs.

The main incidence of tourism industry development in East Gippsland is likely to fall on the coastal areas, particularly Mallacoota and Marlo/Cape Conran, though significant impacts would also be likely in Orbost and Cann River, the major centres on the Princes Highway.

Table 7.2: Alternative employment development scenarios for East Gippsland at 2001. FTAE jobs.

	<i>Timber</i>	<i>Tourism</i>	<i>Total</i>
1985 Employment	580	120-130	700-710
LCC park proposals and:			
(1) No integrated harvesting	100-115 ⁽¹⁾	250+	350-365
(2) Conservative integrated harvesting	135-150	250+	385-400
(3) Full integrated harvesting	460-510	250+	710-760

Source:
NIEIR projections

Note:
(1) The range covers the 3 per cent and 2 per cent productivity growth figures respectively.

If multiplier values of 1.6 and 1.2 are applied, respectively, to the change in timber and tourism jobs from 1985, total regional employment at year 2001 would be projected to decline by about 600 jobs. It would be possible to add various kinds of subsidised jobs to improve this position (e.g. some examples are given in Christoff and Blakers (1986)) but the figures indicate a huge task would be faced. This is plainly an option which would be

7.4 Overview on employment projections

The projections in the preceding sections can be brought together to indicate how regional employment levels might change under alternative development scenarios. The simplest way to do this is to consider the two key economic base sectors likely to be affected by the LCC proposals. This is done in Table 7.2, projections being presented for year 2001.

The first scenario is LCC Park Proposals and No Integrated Harvesting. This involves a dramatic decline in regional timber industry employment, due mainly to the need to move to sustainable yield. NIEIR projects timber industry employment at about 100-120 jobs in year 2001 in this situation, with perhaps 20 of these jobs being in further processing and 80-95 being in the unseasoned side of the industry. NIEIR is relatively pessimistic about prospects for further processing in this scenario. The timber industry and regional economy would be expected to decline so much as to make the support mechanisms, skill levels, etc. needed for such initiatives less likely to be readily achievable. Tourism employment is projected to exceed 250 jobs, about twice its current size. Employment in the two sectors combined is expected to be about half its 1985 level, a loss of about 350 jobs in the economic base.

expected to produce regional economic contraction on a significant scale.

The second scenario combines the LCC Park Proposals and Integrated Harvesting from the Normal Sawlog Areas. As shown in Table 2.3, NIEIR expects this would add about 30-40 jobs to those projected for the first scenario, with about 10 of these extra jobs being in further processing activities and the remainder

in pulpwood harvesting and transport. The result is an improvement from the regional perspective but still leaves employment levels well down on those for 1985.

Tourism employment levels are unlikely to be different between scenarios 1 and 2, since the main tourism attractions will be little affected by the introduction of integrated harvesting.

Under scenario 2, regional employment levels in 2001 would be projected to be about 540–550 below the 1985 level. Public sector, or other, job creation programs could be used to reduce this decline somewhat, at a cost to Consolidated Revenue.

The third scenario, LCC Park Proposals Plus Full Integrated Harvesting, is the only one of the three projected to produce an increase in employment in the regional economic base, relying mainly on private sector activity. Timber employment is projected at about 460–510, with

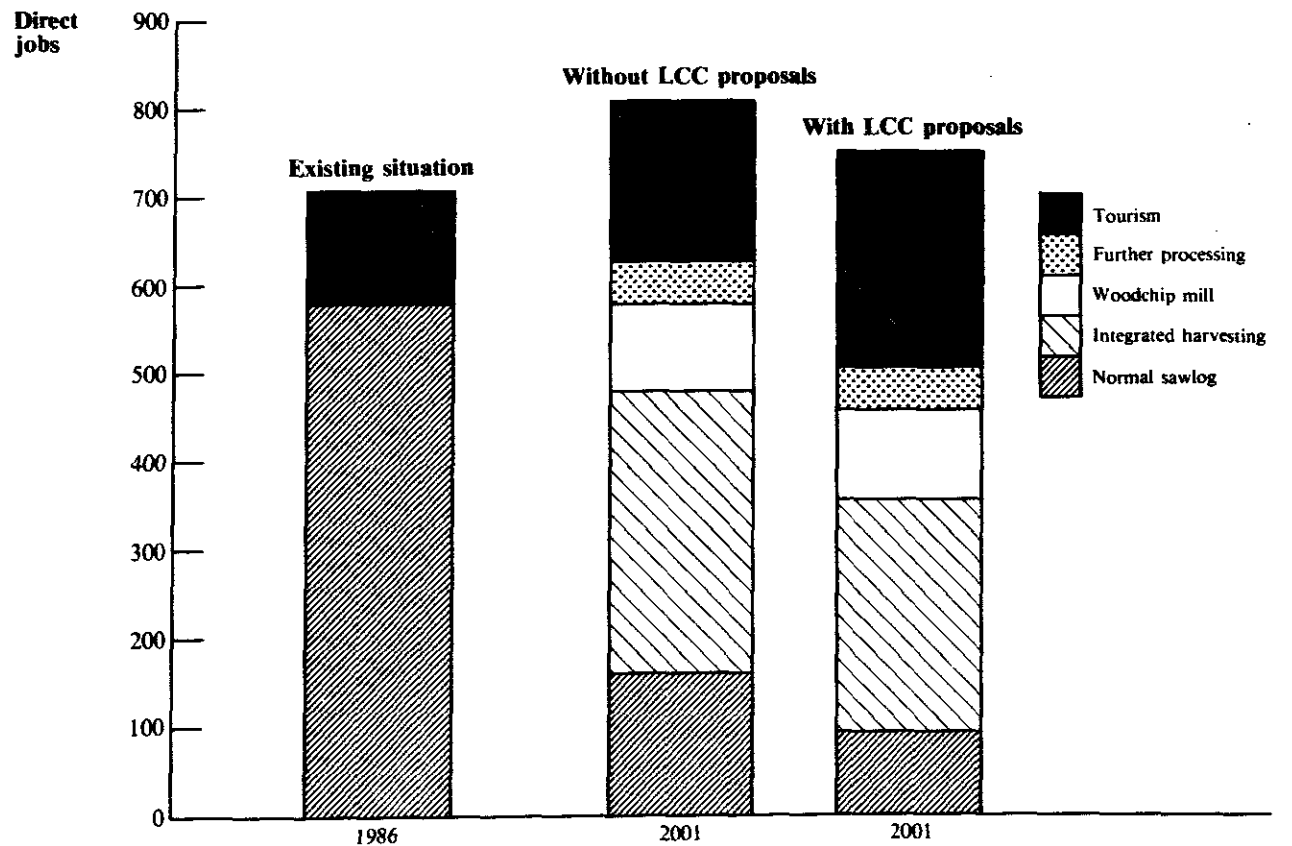
- 310–360 in integrated sawlog/pulpwood operations

- 100 in a woodchip mill
- 50 in value added processing.

NIEIR considers that, the larger the local timber industry, the more likely it is that regional further processing activities will develop. The highest number of jobs in further processing are thus projected for this scenario. No allowance has been made for a pulp or paper mill which would have to be given long odds. Also, in projecting employment in integrated operations, it is assumed that management strategies are implemented to ensure that pulpwood harvesting is not permitted to squeeze out sawlog operations.

Even under the increased employment in the economic base projected for scenario 3, total regional employment is not expected to increase much. The increase of about 125 jobs (or more) in tourism implies a gain of about 150 jobs in the region, with multiplier gains included. Even at the top end of the range for timber employment (510 with 2 per cent annual productivity increase), a direct employment decline of 70 jobs is projected, or a total decline

Figure 7.1: Employment implications of the LCC Proposals (2 per cent Labour Productivity Growth Assumed for Timber Industry)



of about 110 jobs. Thus, if the timber industry achieves a 2 per cent annual productivity increase, then a small increase in total regional employment is projected (about 30–40 jobs). A 3 per cent productivity growth rate in the timber industry implies virtually stable regional employment in the economic base under scenario 3, with a small decline in total regional employment when multiplier impacts are included.

Stability, or even a small increase, in regional employment levels is feasible if the full integrated harvesting scenario eventuates. The alternative scenarios considered imply declining regional employment unless alternative regional economic development initiatives are implemented. The initiatives noted in this Report are needed to achieve NIEIR's projections. Further gains need more. More detailed work on a regional economic development strategy is required to indicate the best prospects in this regard.

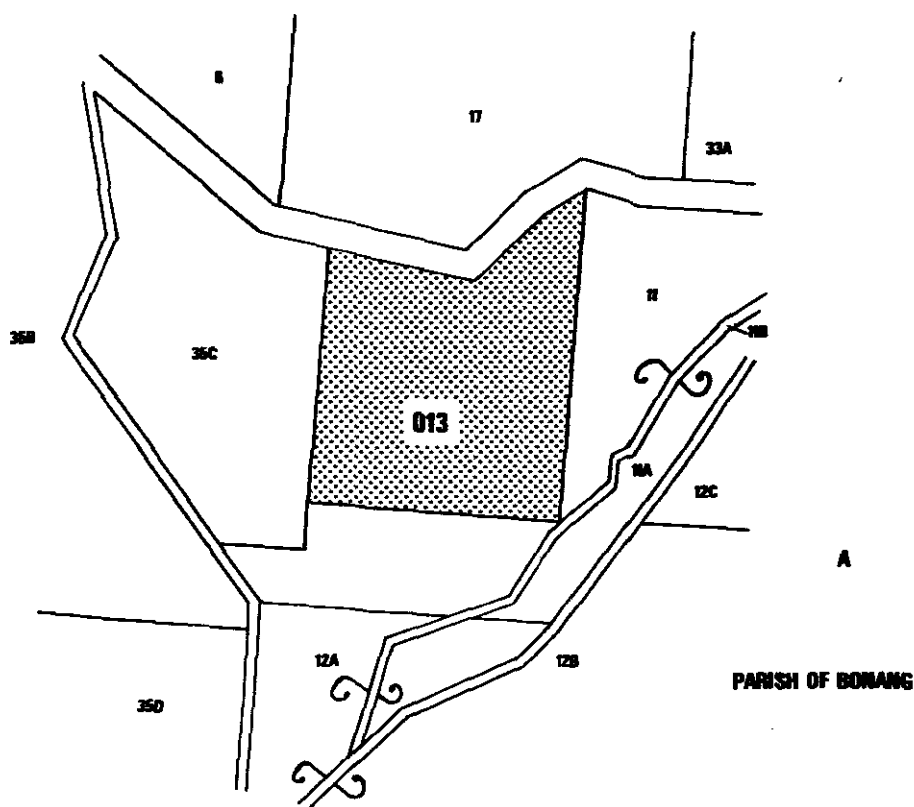
Figure 7.1 sums up the main elements in the various projections presented in this Chapter, showing how small employment increases in the key regional economic base sectors, in total, can be achieved by year 2001 with the LCC proposals implemented (for a 2 per cent productivity growth rate in the timber industry). That Figure also shows a potential net job loss of about 65 jobs in the key economic base sectors due to the LCC proposals comprised of:

- a loss of about 125 jobs in timber
- a (crude) gain of about 60 jobs in tourism.

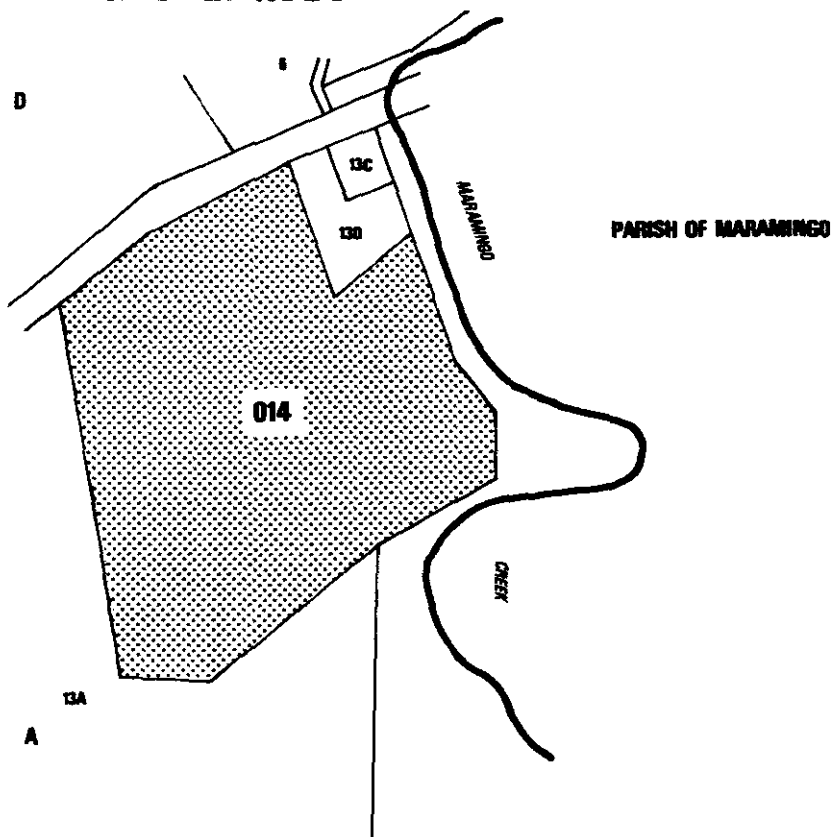
When multiplier effects are included, the implied potential regional job loss is about 128 jobs at year 2001, due to the LCC proposals. At a 3 per cent productivity growth rate this figure would drop to 94 jobs.

In summary, NIEIR concludes that the LCC proposals, in total, will mean a loss of up to about 130 jobs, in total, in East Gippsland by year 2001.

MAP 1



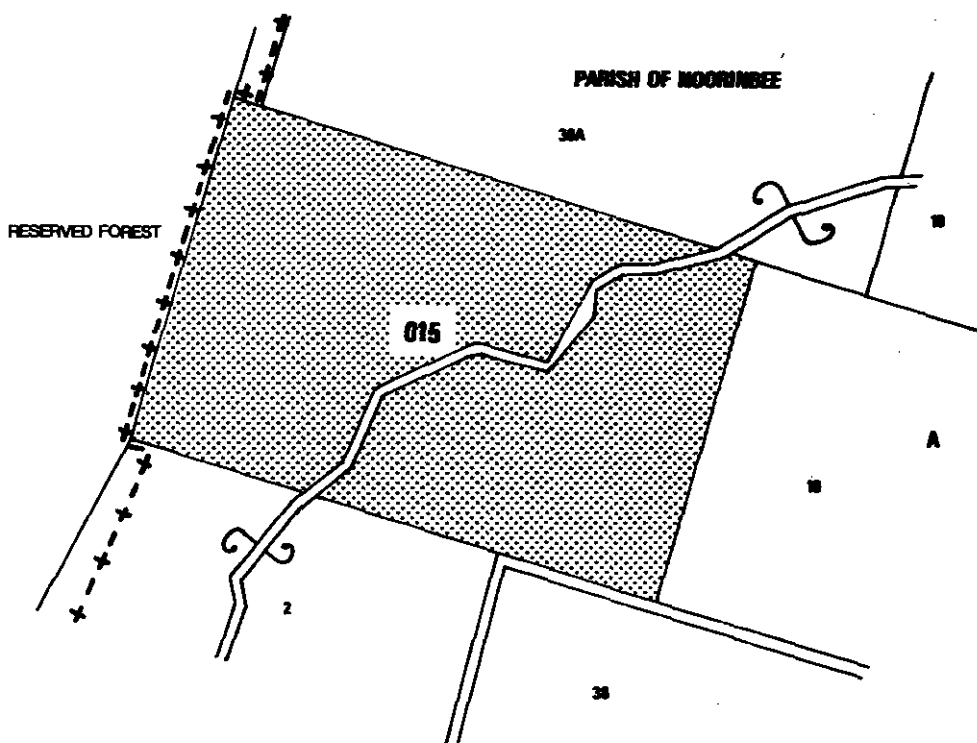
MAP 2



SCALE 1 : 15,840

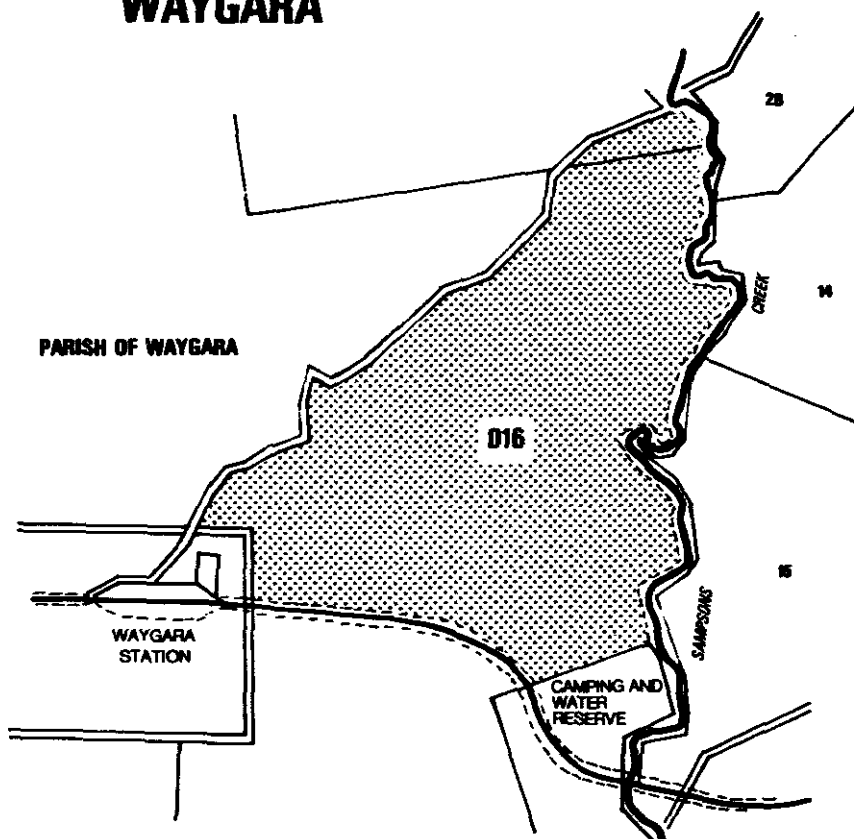
AGRICULTURE 015 **NOORINBEE**

MAP 3



AGRICULTURE 016 **WAYGARA**

MAP 4



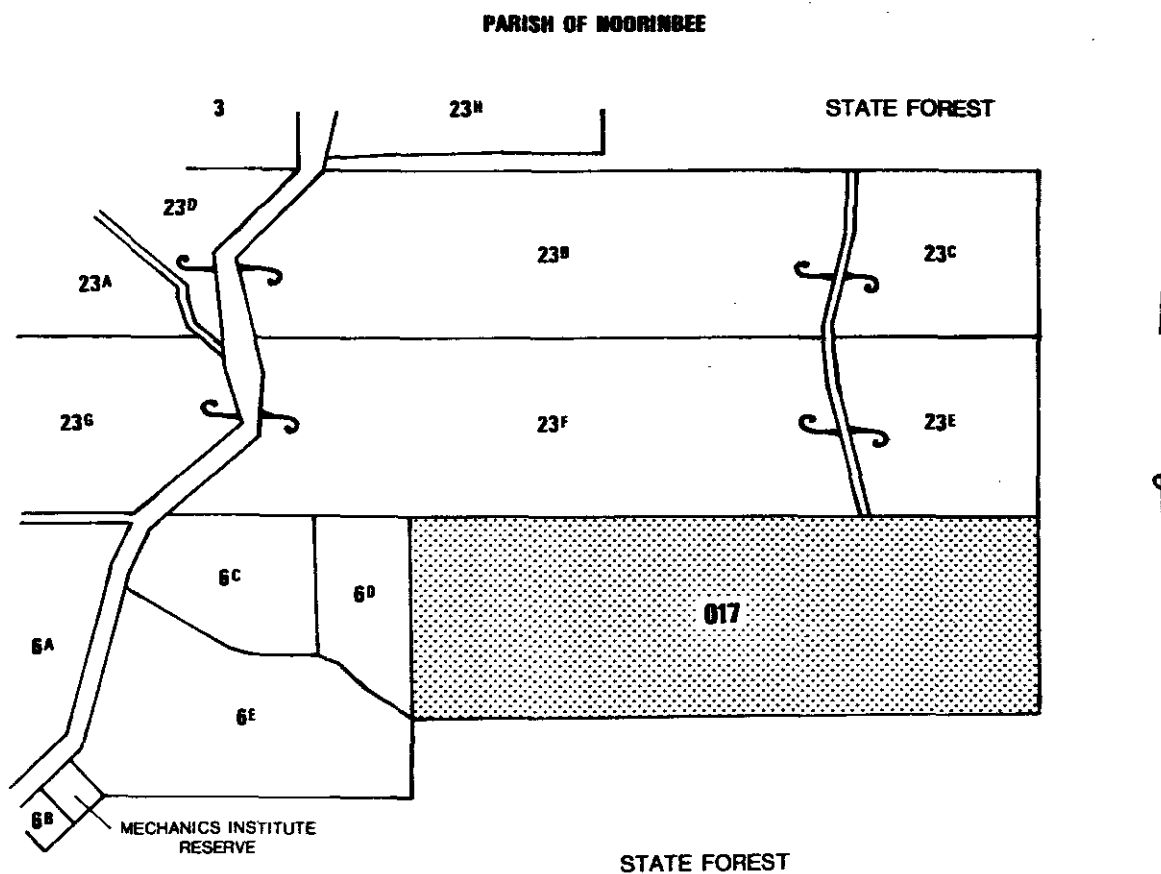
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NOORINBEE

MAP 5



PUBLIC LAND RECOMMENDED FOR ALIENATION



SCALE 1 : 15,840